98TH CONGRESS
2d Session

SENATE

REPORT
98-631

SUPERFUND AMENDMENTS OF 1984

REPORT

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

TO ACCOMPANY

S. 2892

together with

ADDITIONAL AND MINORITY VIEWS

SEPTEMBER 21 (legislative day, SEPTEMBER 17), 1984.—Ordered to be printed

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SEPTEMBER 21 (legislative day, SEPTEMBER 17), 1984.—Ordered to be printed

Mr. STAFFORD, from the Committee on Environment and Public Works, submitted the following

REPORT

together with

ADDITIONAL AND MINORITY VIEWS

[To accompany S. 2892]

The Committee on Environment and Public Works, to which was referred the bill (S. 2892) a bill to amend the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, having considered the same, reports favorably thereon with an amendment in the nature of a substitute and recommends that the bill, as amended, do pass.

GENERAL STATEMENT

PURPOSE AND SUMMARY

S. 2892, as amended, amends the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 to provide $7.5 billion in additional funding over a five-year period. Of this $7.5 billion, $1.030 billion is to be derived from general revenue and $6.470 billion from special taxes. Jurisdiction over the amount and nature of the tax lies with the Committee on Finance.

The overriding purpose of S. 2892 is to expand and accelerate the Federal Government's program to clean up and otherwise protect the public health and environment from releases of hazardous substances and wastes. To this end, S. 2892 not only provides additional money and time, but makes changes in the law which improve the pace and direction of those cleanup efforts. Title I of the bill establishes cleanup standards to be applied so that human health and the environment is protected in every circumstance; a health program to assure that at each Superfund site a thorough review

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and assessment is made of the threats posed to human health; a chemicals testing program to develop adequate information on frequently encountered hazardous substances; and a grant program to assist States that wish to establish demonstration systems of assistance for victims of hazardous substances and wastes.

BACKGROUND AND NEED

The modern chemicals technology which has contributed so greatly to this Nation's standard of living has also left a legacy of hazardous substances and wastes which pose a serious threat to human health and the environment. By some estimates, there are over 20,000 abandoned hazardous waste sites in the United States. In large areas, drinking water supplies are contaminated by synthetic organic chemicals, including a large number of supplies which rely upon groundwater, a resource generally through to be safe from contamination. Unfortunately, the Environmental Protection Agency estimates that for groundwater systems serving less than 10,000 persons, one of every six supplies is contaminated by volatile chemicals and nearly one of every three of the larger systems.

It was to deal with such problems that the Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, which quickly came to be known as the "Superfund". The law authorized a five-year, $1.6 billion program to clear up releases of hazardous substances, pollutants and contaminants. It also created a new health agency, the Agency for Toxic Substances and Disease Registry, located within the Department of Health and Human Services. The bulk of the clean up program, however, was delegated to the Environmental Protection Agency.

During the four years which have passed since enactment of the Superfund law, public concern has intensified. In some areas and States, public opinion polls show that the public is more concerned over the problem of hazardous substances and wastes than any other domestic issue.

The Environmental Protection Agency has now embarked on an aggressive program to clean up 130 Superfund sites per year and estimates that it will be called up to react to up to 170 emergencies annually. The Assistant Admininstrator has testified that a five-year extension of this program would require an additional $5.2 billion. But this estimate fails to take into account other important and substantial demands on the Fund. It does not, for example, allow leeway for the payment of any claims for natural resource damages, one of the law's most important, but still unimplemented, components. The estimate also does not allow any room for increase in the cost of cleanup per site beyond the current estimate, even though the Agency's previous projections have climbed in the past four years from $2.5 million per site to $6.5 million. Finally, the estimate assumes that between now and 1990, which is the expiration date of the five-year extension, there will be no inflation. Based on this, it seems clear that even a simple extension of the current program will require substantially more than $5.2 billion. With the addition of new responsibilities in this bill (estimated by the Agency to cost $1 to $1.5 billion over 5 years), the Committee

concluded that an appropriate five-year funding level was $7.5 billion, as contained in the reported bill.

STATEMENT OF PRINCIPLES

During Committee consideration of this bill, it is noted that neither this legislation nor the existing law includes a statement of principles or goals and objectives, and several Members believed that such a statement would be worthwhile. The existing statute was designed to help address many of the problems faced by our country as a result of toxic chemical contamination. The statute does not and is not intended to replace other laws which provide the regulatory foundations to address a variety of these toxic chemical concerns. The existing statute and this reauthorization are structured to complement these laws. It is intended to provide the authority and resources to clean up hazardous substance releases.

The problem of hazardous substances in the environment is complex. Nonetheless, certain basic principles setting out the elements necessary to address these problems can be identified. These principles are:

First, to provide ample Federal authority for cleaning up releases of hazardous substances, pollutants and contaminants;

Second, to assure that those responsible for any damage, contamination, environmental harm or injury from hazardous substances bear the costs of their actions;

Third, to provide a fund to finance response actions where a responsible party does not clean up, cannot be found or cannot pay. This fund should be based primarily on contributions from those who have been generally associated with such problems in the past and who today profit from products and services associated with such substances; and

Fourth, to provide adequate compensation to those who have suffered economic, health, natural resource, or other damages.

By implementing the preceding principles, the major objective of the statute will be accomplished: to provide an incentive to those who manage hazardous substances or are responsible for contamination sites to avoid releases and to make maximum effort to clean up or mitigate the effects of any such release.

SUMMARY AND DISCUSSION

TITLE I

INDIAN TRIBES (SEC. 101)

SUMMARY

This section adds a definition of Indian tribes to the definitions contained in section 101 of CERCLA. The section also provides that the requirements for prior assurances from a State that it will pay a share of the costs of remedial action and the costs of future maintenance shall not apply to remedial actions undertaken on Indian lands; and that in such cases the Federal Government, instead of the State, shall ensure the availability of acceptable facilities to manage any hazardous substances removed from the site. The section also authorizes Indian tribes to recover damages for injury to, destruction of, or loss of natural resources resulting from releases of hazardous substances. The amendment also provides that Indian tribes are to be afforded substantially the same treatment as States under certain specific provisions of CERCLA.

DISCUSSION

CERCLA does not now expressly indicate under what terms and conditions the Superfund program applies to Indian lands. Section 101 of the bill would eliminate the resulting uncertainty and ambiguity by specifying how the program operates within Indian lands.

Subsection (a) of the amendment adds to the Act a new definition of Indian tribes specifying that, for the purposes of CERCLA, the Indian tribes to be covered by the provisions of this amendment include any Indian tribe, band, nation, or other organized group or community, including an Alaska Native village, which is recognized as eligible for the special programs and services provided by the United States. The term does not include Alaska Native regional or village corporations, which are organized for other purposes.

Subsection (b) of the amendment limits the requirements of section 104(c)(3) of CERCLA in the case of responses to be performed on Indian lands. That section provides that before remedial action is to be undertaken under the Superfund program, there must be prior assurances from the State that it will pay a share of the remedial costs and future maintenance costs, and will assure the availability of an acceptable facility to manage any hazardous substances which are being removed from the site. The amendment in subsection (b) would provide that the first of these two requirements—for a State cost share—would not apply in the case of remedial action on Indian lands. The Federal government would in-

stead pay all remedial action and maintenance costs from the Fund. The second requirement—for an available facility to manage any hazardous substances removed from the site—would continue to apply if the site is on Indian land, but the Federal government, not the State or the Indian tribe, would be charged with the responsibility of assuring the availability of the facility. These special provisions are justified by the unique trust responsibility which the United States has for Indians.

The amended requirements for remedial action on Indian lands would apply whenever the remedial action is to be taken on land or water held by an Indian tribe; held by the United States in trust for Indians; held by a member of a tribe if the land or water is subject to a trust restriction on alienation (as is the case with allotment lands that are held by a member of a tribe subject to a prohibition against conveyance to anybody other than another tribal member); or otherwise within the borders of an Indian reservation (such as non-Indian land within a reservation).

Subsection (c) of the amendment expressly provides that the Federal Government, upon determining that an Indian tribe has the capability to carry out any or all of the response authority authorized by section 104 of CERCLA may enter into a contract or cooperative agreement with the tribe for that purpose and reimburse the tribe fromn the Fund for the expenses incurred under that contract or cooperative agreement. Any such contract or cooperative agreement would fall within the scope of section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e. (b)), which provides that "Any contract, subcontract, grant, or subgrant pursuant to * * * any other Act authorizing Federal contracts with or grants to Indian organizations or for the benefits of Indians" shall afford maximum opportunities for employment and training of Indians, and shall require a preference for awards to be made to Indian organizations and Indian-owned businesses in any subcontracting under the contract or cooperative agreement.

Subsections (d) and (e) of the amendment provide that Indian tribes may recover damages for injury to, destruction of, or loss of natural resources caused by the release of a hazardous substance. This provision would give an Indian tribe the same rights under sections 107 and 111 of CERCLA (with respect to natural resources belonging to, managed by, controlled by, or appertaining to the tribe; or held in trust for the tribe; or belonging to a member of the tribe if the resources are subject to a trust restriction on alientation, as is the case of allotment lands held by individual tribe members subject to a condition that they not be conveyed to anybody other than another tribal member) as a State has under those sections (with respect to natural resources belonging to, managed by, controlled by, or appertaining to the State). This provision does not extinguish the United States' trust responsibilities with respect to Indian resources, but merely provides that a tribe itself may act to recover damages instead of relying on the United States to do so on its behalf. Accordingly, subsection (f) of the amendment would provide that the statute of limitations for asserting natural resource damage claims does not start to run against an Indian tribe until the United States either notifies the tribe that it will not seek dam-

ages on the tribe's behalf or allows the normal time period for filing such claims to pass without filing on behalf on the tribe.

Subsection (g) of the amendment would add a new section to title I of CERCLA, specifying that Indian tribes are to be afforded substantially the same treatment as a State under certain specified provisions of CERCLA. With regard to the provisions of section 105, an Indian tribe is to be afforded substantially the same treatment as a State with respect to all provisions other than the provision regarding the inclusion of at least one site per State on the national priority list. As a result, a tribe would be able to establish and submit for consideration by the President priorities for remedial action among known and potential releases affecting the tribe in any manner, but would not be assured that at least one such site so proposed by the tribe would be included among the one hundred highest priority sites.

Alternative Water Supplies (Sec. 102)

SUMMARY

The reported bill defines the term "alternative water supplies" in new section 101(34) to include, but not be limited to, drinking water and household water supplies.

DISCUSSION

The current law authorizes the provision of alternative water supplies in both removal and remedial actions. The Committee was made aware of situations in which this authority has been used to replace drinking water but not household water. This section makes it clear that household water must be replaced when this authority is invoked. The prompt provision of household water supplies should minimize the unfortunate situations in which citizens are bathing, washing clothes, and carrying out household chores with water contaminated by a release under this Act.

The replacement of all water, not just that used for drinking, is important for protection of human health. For many chemicals, especially volatile organics, the major exposure route is not through consumption in drinking water, but inhalation after the volatile liquids enter the household atmosphere due to showering, laundering, cooking, etc. Similarly, for some chemicals skin absorption through contaminated clothing can be a significant exposure route. For these reasons, prudence demands that when drinking water supplies are replaced, household water supplies should be replaced as well.

State Credit (Sec. 103)

SUMMARY

Subsection (a) of this section of the bill amends section 104(c)(3) of current law to allow a State to receive credit for its expenditures at a Superfund site made prior to December 11, 1980, and to apply such a credit to the State's share of cleanup costs at other Superfund sites.

Subsection (b) of this section allows States to receive credit from the Environmental Protection Agency for the expenditure of State funds for cleanup costs at sites on the National Priority List, in advance of any obligation of Federal funds to those sites. The credit could then be applied against the State share of cleanup costs at other Superfund sites.

In order to receive this credit, a State is required to have entered into a cooperative agreement or contract for this purpose under new section 104(d)(1) of the Act. The credit will only be granted to the State for reasonable, documented, direct out-of-pocket non-Federal funds, and only in accordance with the cooperative agreement.

DISCUSSION

Under current law, credit that is granted for certified State expenditures made during the "window" period of January 1, 1978, to December 11, 1980, can be applied only toward work at the site at which the credit was earned. This section allows the State to apply a credit for expenditures during this period to other sites if little or no work remains to be done at the original site, or if the certified expenditures exceed the State's share of the cleanup costs at the original site.

The purpose of the second part of this amendment is to provide the States with the incentive to initiate responses at sites for which cooperative agreements and contracts have been signed at the fastest possible pace. This provision is intended to complement the amendment to the Act that would allow States to enter into multisite cooperative agreements. Included in these agreements could be specification of the types of actions for which credit is allowed under this section.

Selection of Remedial Actions (Sec.104)

SUMMARY

New section 104(c)(4)(A) requires that evaluations of the cost-effectiveness of proposed alternative remedial actions reflect long-term, as well as, short-term costs. The long-term cost must include evaluation of the operation and maintenance costs throughout the lifetime of the proposed remedy.

New section 104(c)(4)(B) provides that actions leading to a permanent solution to waste contamination, such as treatment, are to be preferred; short-term containment of relief measures such as transferring waste from one site to another is to be considered the least favored alternative.

New section 104(c)(4)(C) defines a cleanup standard for remedial actions taken under this Act, either Fund-financed or in enforcement actions (including settlements and consent decrees). All remedial actions must attain a degree of cleanup and control of further release which, at a minimum, assures protection of human health and the environment. However, the specific remedy at each site should be relevant and appropriate to the circumstances of the site.

New section 104(c)(4)(D) provides that on-site cleanup or containment actions are not require to be permitted under subtitle C of the Solid Waste Disposal Act, but that such actions must satisfy

the protection of human health and the environment requirements of subparagraph (C).

New section 104(c)(4)(E) retains language currently in the statue, subject to the new, more specific requirements of this paragraph. This language requires that when selecting appropriate remedial actions, the need to protect human health and the environment at the particular site in question must be balanced against the amounts which would then be available in the Fund for other sites.

DISCUSSION

Under current law, the Administrator is required to select cost-effective remedial actions. New Section 104(c)(4)(A) requires that evaluations of the cost-effectiveness of proposed alternative remedial actions reflect long-term, as well as, short-term costs. Long-term costs include evaluation of the operation and maintenance costs throughout the lifetime of the proposed remedy. Consideration of long-term costs will undoubtedly lead to more environmentally sound decisions in favor of treatment of hazardous wastes as opposed to short-term measures such as the mere relocation or transfer of contaminated material to another site.

Similarly, subparagraph (B) stresses the need to move toward complete destruction of hazardous substances.

Subparagraph (C) addresses a number of issues related to the degree of cleanup to be achieved by remedial actions. At a minimum, all remedial actions must assure protection of human health and the environment. However, conditions differ at each site. Therefore, the specific remedy should be relevant and appropriate under the circumstances present at each site. For example, the mix of wastes and the size, topography, and geology and other important factors for one site will likely vary from any other. No rigidly uniform remedy would likely be the best at all of these sites. This subsection provides flexibility to the President in the choice of design standards selected for remedial action, rather than mandating, for example, the uniform implementation of design standards under section 3004 of the Solid Waste Disposal Act. The basic performance standard of subtitle C, protection of human health and the environment, does always apply.

Case-by-case distinctions should be made in design requirements where appropriate. Remedial actions can therefore be evaluated under a broad spectrum of factors including cost effectiveness and technical performance, provided that the remedy chosen always protects human health and the environment.

The so-called Fund-balancing provision of subparagraph (E) is considered necessary to assure that sites are cleaned up to the greatest degeee possible without sacrificing the protection needed at other sites. However, the Agency may not use this provision to unnecessarily delay cleanup actions because of this balancing test, but rather should assure that available funds are used to attack the most important problem sites. Human health and the environment must be protected in all remedial actions, at a minimum.

State and Federal Contributions to Operation and Maintenance (Sec. 105)

SUMMARY

The reported bill adds new paragraphs to section 104(c), providing that the cleanup of contaminated ground and surface water at sites on the National Priority List be considered remedial action until protection of human health and the environment is achieved, or for a period of up to 5 years after the commencement of operation of ground or surface water treatment measures, whichever is earlier. Under paragraph (6), after the special taxes and general fund authorizations of this reauthorization bill are obligated, the costs of extended remedial action under paragraph (5) will be paid out of response costs recovered to the Fund for responsible parties.

DISCUSSION

This section provides that the funding for the on-site and off-site cleanup of contaminated ground and surface water be shared on a 90 percent Federal and 10 percent State basis for five years following the construction and commencement of operation of such treatment measures. In the cases where pumping and treating of water or other technology is required, the five-year period would begin after this technology is made operational for continuous use or until protection of public health and the environment is assured, whichever is earlier. Under current EPA policy, the costs of such operation are provided on a 90 percent Federal share for only one year.

The Committee felt that it was important to specify what the financial obligation of the Superfund is in regard to the cleanup of ground and surface water contamination at sites on the National Priority List. The current practice of the Environmental Protection Agency is to finance remedial action activities such as the removal of drums, excavation of soil, and initial treatment of ground and surface waters on the 90/10 basis provided in section 104(c)(3). Under this policy, the long-term treatment of contaminated water becomes a State responsibility one year after all other remedial actions are completed. The continued treatment of contaminated water, which is in actuality a major part of the cleanup program, is considered by EPA to be an operation and maintenance cost.

The distinction between remedial action and operation and maintenance should be based on the degree of cleanup that has been achieved. This section determines that the cleanup of ground and surface water, whether on or off-site, is a remedial action until the protection of human health and the environment is assured. This is the minimum requirement for remedial action under section 104(c)(4), as amended.

The Environmental Protection Agency expressed some concern about the possibility that the Agency would have to set aside funds during this five-year authorization period to finance long-term cleanups of contaminated ground and surface water. The reported bill addresses this concern by putting a five-year time limit on the mandatory involvement of the Federal fund in such treatment expenses, and by specifying that expenses accrued after the reauthor-

ization period of the Act be paid exclusively from responsible party cost recoveries.

Siting of Hazardous Waste Facilities (Sec. 106)

SUMMARY

The reported bill amends section 104(c) by adding a new paragraph providing that, effective four years after enactment, a State shall not receive Superfund money for remedial actions unless the State provides assurances that there will be adequate capacity and access to facilities in compliance with the hazardous waste regulatory program under subtitle C of the Solid Waste Disposal Act for the treatment or disposal of all that state's hazardous wastes for the next twenty years.

DISCUSSION

A criticial step in the implementation of a rational, safe hazardous waste program is the creation of new facilities employing the most advanced waste management technologies. But to establish newer, improved facilities, sites on which these facilities can operate must be found and made available. Although most States have enacted or have pending some form of siting legislation, few, if any, have developed policies and siting programs that will assure continued facility capacity in the long term. Recognizing that, as a general rule, States are not moving aggressively to avoid the creation of future Superfund sites, an amendment on siting of hazardous waste facilities was adopted by the Committee.

This section of the bill provides that, effective four years after enactment, a State shall not receive Superfund money for remedial actions unless the State provides assurances that there will be adequate capacity and access to RCRA-approved facilities for the treatment or disposal of all of that State's hazardous wastes (other than those wastes that will be recycled) for the next 20 years.

Such assurances must be made to the President. The President is expected to delegate the Federal responsibilities under this amendment to the Administrator of the Environmental Protection Agency.

The availability of funds for "removal actions" is not affected. The short-term, emergency cleanup of, for example, a road side spill or a stack of drums that are about to explode could proceed. What will be withheld are funds for "remedial actions," the long-term, permanent clean-up of sites on the National Priority List.

To avoid a cutoff of funds, each State is required to develop State policies and siting programs that will make the best use of existing facilities in the short term and will assure continued facility capacity in the long term. The details of the siting process will differ depending on the circumstances of each State.

A site in every State is not required. In some cases, multi-state efforts may be appropriate. Use of binding agreements through interstate compacts guaranteeing access to a facility is only one example of how a State may provide the requisite assurances. State or local ownership and operation of facilities or contracts with private facilities may also suffice.

The rationale for this requirement is straight-forward: Superfund money should not be spent in States that are taking insufficient steps to avoid the creation of future Superfund sites. Pressures from local citizens place the political system in an extremely vulnerable position. Local officials have to respond to the fears of local citizens. The broader social need for safe hazardous waste management facilities often has not been strongly represented in the siting process. A common result has been that facilities have not been sited, and there has been no significnat increase in hazardous waste capacity over the past several years.

In 1976, the Resource Conservation and Recovery Act (RCRA) was passed, mandating the construction of needed hazardous waste facilities and placing the responsibility for siting the facilities with the States.

Unfortunately, when RCRA was first passed, Congress failed to anticipate the intensity of public opposition to new and expanded waste management facilities. While everyone wants hazardous waste managed safely, hardly anyone wishes it managed near them. This is the NIMBY syndrome (not in my backyard). Yet if the RCRA and Superfund programs are to work—if public health and the environoment are to be protected—the necessary sites must be made available.

This is not a new issue. In 1976, RCRA directed the States to develop plans for the management of their wastes, including hazardous wastes. In 1980, EPA, the National Governors Association and numerous other groups and institutions produced reports, handbooks and resolutions on the siting issue.

Section 104 of Superfund already requires that each State assure the availability of a RCRA approved facility for management of materials removed from a site before remedial action can begin. Unfortunately, that condition has been largely ignored by EPA and the States.

Most States have enacted, or have pending some form of siting legislation. Some have chosen to establish siting approval boards; some have chosen to authorize preemption over local zoning laws; some have authorized State acquisition, operation and maintenance of sites through existing institutions or through quasi-public corporations. Which, if any, of these approaches will work remains to be seen. Merely having enacted such legislation, however, will not satisfy the requirements of this section. Each state must provide assurances that their legislative program can work and will be used.

There are a number of obstacles to siting new hazardous waste management facilities. These include:

—First, lack of cooperation among interested parties who distrust one another's motives and doubt the willingness of the other parties to make any substantial concessions to alleviate their concerns. Use of compensation, mitigation or other measures such as land value guarantees or the posting of bonds to finance continued water supply testing and the like might help alleviate some of these problems.

—Second, lack of reliable, objective information or criteria for evaluating proposals and sites and citizens' distrust of technical information provided by government or industry.

—Third, insufficient public perception of the need for new treatment facilities.

—Finally, the most distressing problem, leadership by government officials at all levels is sorely lacking.

A successful siting program should recognize three key principles:

First, a complete technical analysis of all proposed sites is essential prior to the selection of a particular site. This analysis should take into account both environmental effects (e.g. from the hydrology, geology, ecology, etc.) as well as factors based on the proximity and relation of the facility to residences and institutions.

Second, site selection must be accompanied by full public participation. This involvement should start at the beginning of facility planning, and should continue through the site selection and approval process. It should be accompanied by a broad-scale public education effort, since the public needs to become a knowledgable partner in site selection decisions.

The opposition of the public stems in part from the fact that the procedures for citizen involvement have been neither well thought out nor carefully applied. Further, the standard mechanism for involving the public—the public hearing routinely becomes a crowded, highly emotional exercise in mob psychology. In addition, the media often highlight the fears of the opponents, making rational decisions even more difficult to make.

Third, the process of site selection should find a way to transcend blanket local vetoes. No community should be able to remove itself from consideration on political grounds alone. Everyone must take responsibility for assuring that adequate sites are available.

Cooperative Agreements (Sec. 107)

SUMMARY

The reported bill amends section 104(d)(1) of the current law to make clear that contracts and cooperative agreements with States can be on a multi-site basis. In addition, specific activities including enforcement are identified as eligible for funding under such agreements.

DISCUSSION

The Superfund program will be most effective if, to the maximum extent possible, Federal and State governments work in a cooperative manner to speed the cleanup of hazardous releases of hazardous substances, pullutants and contaminants. The Act recognizes the importance of the State role by authorizing the President to enter into contracts or cooperative agreements with States for carrying out any or all of the cleanup authorities included Superfund.

The Environmental Protection Agency originally interpreted this authority to permit only contracts or cooperative agreements on a site-by-site basis. However, the Agency has subsequently recognized the advantages to both the Federal Government and the States of permitting "multi-site" cooperative agreements, so that actions at several sites can be grouped under a single contract. S. 2892 explic-

itly clarifies existing law to authorize the President to enter into contracts or cooperative agreements with States on a multi-site basis as well as on a single site basis and to indicate those type of actions for which the Hazardous Substance Response Trust Fund may be used by the States.

The amendment also authorizes the Administrator to provide Funds to States through contracts or cooperative agreements for the reasonable costs of undertaking enforcement actions against responsible parties for the purpose of securing site responses by those parties.

The Environmental Protection Agency only recently adopted the policy of allowing multi-site cooperative agreements. This amendment assures the continuity of this policy. In addition, the amendment authorizes States to enter into such multi-site agreements on both a prospective and retrospective basis. The first multi-site cooperative agreement granted by EPA, on a prospective basis, was to the State of Pennsylvania, for actions at 12 sites not previously addressed under cooperative agreements. The amendment also permits States to combine existing cooperative agreements under new multi-site agreements (i.e., to enter multi-site agreements on a retrospective basis). EPA is directed to establish guidelines whereby States, at appropriate times, may be permitted to negotiate new cooperative agreements which combine any or all of their existing single site agreements.

The amendment lists those types of actions which are considered eligible costs under cooperative agreements. In addition to response costs, these include related activities associated with the overall implementation, coordination, enforcement, training, community relations, site inventory and assessment efforts, and administrative of remedial activities authorized by the act. With the exception of enforcement costs, all of the above costs are currently eligible and therefore do not constitute a change from current policy.

Enforcement costs are included in this list to improve the capability of States to undertake enforcement actions against responsible parties for the purpose of securing site response by those parties. Eligible enforcement costs include, but are not limited to, the costs of information gathering, discovery, expert witnesses and other expenses related to litigation or administrative enforcement, and State oversight of private party responses to the extent such oversight costs are not otherwise provided by those private parties.

Nothing in section 104(d)(1) shall preclude the President from taking a separate enforcement action against those parties included in a State enforcement action, nor require him to enter into a cooperative agreement or contract prior to undertaking a Federal enforcement action.

One substantial advantage of multi-site cooperative agreements is that they will better enable EPA and the States to more effectively and efficiently use and target their limited resources. Under a multi-site agreement, a State would be able, with EPA's concurrence, to shift funds from one site to another included under the same multi-site cooperative agreement. This provision will allow States and EPA to quickly deobligate funds from sites for which they were originally slated but no longer needed, or not needed at the moment, and reobligate the funds for activities needed at an-

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other site, without going through the current lengthy process of EPA withdrawing the monies to the Hazardous Substances Response Trust and then negotiating a new cooperative agreement for reobligating the funds to the State.

Health Related Authorities (Sec. 108)

SUMMARY

The reported bill amends section 104(i) of the Act by adding twelve new paragraphs relating to health assessments, health studies, and other authorities of the Agency for Toxic Substances and Disease Registry (ATSDR). These are described in detail in the Discussion below. In addition, the bill amends section 111(c)(4) to clarify that all the work of ATSDR, including toxicologic and other laboratory studies, health assessments, and epidemiologic studies, are to be paid out of Superfund. A new section 111(n) is added, making available not less than $18,000,000 for fiscal year 1985 and not less than 5 percent of the annual appropriation out of the Fund (or $50,000,000, whichever is less) for each fiscal year thereafter, directly to the Agency for Toxic Substances and Disease Registry. ATSDR is expected to cooperate and communicate with the Environmental Protection Agency in the implementation of these authorities.

The bill adds a new subsection to section 3005 of the Solid Waste Disposal Act, requiring certain information on exposure to hazardous substances released from hazardous waste disposal facilities to be made available by the owner or operator. Finally, the reported bill makes several technical amendments to section 104(i) of current law.

DISCUSSION

From the outset of its efforts to address the problem of toxic chemicals, the Congress has been concerned by the likelihood that releases of hazardous substances, pollutants and contaminants into the environment pose a significant threat to public health. The public, as well as the scientific community, has suggested that facilities or releases of hazardous substances and other toxic chemicals may be threating the health of nearby residents due to their presence.

Partially for this reason, the Comprehensive Environmental Response, Compensation and Liability Act contains section 104(i), establishing the Agency for Toxic Substances and Disease Registry (ATSDR), which is required to undertake and coordinate health-related activities for toxic chemicals generally and Superfund specifically.

Despite this requirement, ATSDR was not immediately established by the Secretary of Health and Human Services. A lawsuit by outside private organizations was ultimately necessary to compel the Agency's establishment.

To date, ATSDR has failed to receive adequate funding under the Superfund program, and without additional assured funds and personnel the Agency will be unable to carry out its mandated functions. The health-related amendments in S. 2892, as reported, are

designed to improve upon the orignal health authorities contained in section 104(i) of CERCLA. In general, the health-related authorities of the Act have not been adequately exercised. Congress has addressed this issue on an ad hoc basis, year-by-year, by increasing the appropriations for ATSDR and otherwise encouraging complete implementation of the law's provisions. The amendments in S. 2892, as reported, should resolve this problem by creating a permanent earmarking of Funds which will be supplied directly to the Agency, and not pass through the Environmental Protection Agency or be reliant upon that Agency's budget process.

In general, protection of human health is the highest and ultimate goal of the Nation's environmental laws. Health effects data and information underlie all response actions taken under Superfund, as well as most action taken under other environmental laws. To truly protect human health and the environment requires that high priority be placed on the development of reliable data on the health effects of exposures to hazardous substances and other toxic chemicals. Only with such information can informed and rational judgments be made as to what actions must be taken to protect human health. Without information as to what substances are toxic, at what concentrations and under what conditions, it is not possible to determine with confidence which sites should be given highest priority in the cleanup and response process.

Conducting health assessments and studies of populations exposed to releases of hazardous substances from sites and facilities will not only enhance response to immediate health concerns, but will also build a comprehensive body of data that will define the threat that toxic chemicals pose to human health. In the long-term, greater knowledge of the human health effects of exposure to toxic substances will improve the prevention and control strategies required to protect and improve the health of the citizens of this country.

New paragraph (2) of section 104(i) requires the Agency for Toxic Substances and Disease Registry (ATSDR) to provide consultations on health issues relating to exposure to hazardous or toxic substances when so requested by the Environmental Protection Agency (EPA), State or local officials. Consultations to individuals may be provided by the States under cooperative agreements.

ATSDR will provide advice to the EPA, States, and local officials when available data indicate that the hazardous materials or toxic substances potentially have an adverse effect on the health of populations which may be exposed. This advice may include recommended exposure limits or assistance in identifying pathways of exposure so that EPA, the States, and local officials may prevent such exposure in order to protect the public health. The content of a health consultation may be communicated by a short telephone call from a knowledgeable health professional or it may require a more extensive consultation with a site visit, depending on circumstances and community needs. Generally, advice to individuals, as opposed to government entities, will be provided by officials within the States.

Paragraph (3) requires ATSDR to perform health assessments at all existing National Priority List (NPL) sites within two years of the date of enactment. Assessments shall be performed at all sites

added to the NPL (after the date of enactment of the bill), within one year of their inclusion on the NPL. ATSDR shall also perform health assessments at RCRA subtitle C hazardous waste disposal facilities, as required under section 3005(j) of the Solid Waste Disposal Act, where there is sufficient data as to what hazardous substances are present in such facility, when so requested by EPA or a State.

Paragraph 3(B) also provides individuals the opportunity to petition, or make an informal or formal request, for a health assessment where it can be shown that individuals have been exposed to a hazardous substance, the probable source of which is a release under the Act. The petition for a health assessment can be very brief and need only present such information on the identify and concentrations of toxic substances as is known to the petitioners and the nature of any health effects observed by or reported to the petitioners at the time of filing their petition. Further information on conditions at or near the site or on the identity and levels of toxic substances contributing to exposure may be obtained by the Administrator from the EPA, State agencies, or responsible parties. If lack of information is a factor in a decision not to perform a health assessment, the Administrator should inform the petitioners of his need for more information. Other reasons for not providing an assessment may be that no response is needed or that a consultation should be adequate. If a request has a low priority under the scheme in paragraph (3)(C) of this subsection, an assessment may be deferred but not necessarily denied unless extenuating circumstances exist. In the case of any petition, if ATSDR does not initiate a health assessment, the Administrator of ATSDR shall provide a written explanation of why a health assessment is not appropriate.

The results of consultations and health assessments performed under this section, whether by a State or by the Administrator of ATSDR, and any recommendations for further action shall be made available to the individual or organization requesting the consultation or assessment and shall be available to any other person requesting them, except to the extent that deletions from such results or recommendations are required by other law to protect personal privacy.

Each health assessment performed under this subsection shall include a finding as to whether the exposure assessed presents a potentially significant risk to human health, in order to permit the implementation of paragraph (5) of this subsection, and shall include a finding as to whether the exposure concerned creates a significant risk to human health, in order to permit the implementation of paragraph (7) of this subsection.

The Administrator should, through existing channels such as CDC's Morbidity and Mortality Weekly Report and through notice in the Federal Register, assure that physicians and State and local health officials are aware of the provisions for requesting consultations and health assessments from the Agency and from the States and of the nature of the information needed in requesting such services.

Paragraph (3)(C) directs the Administrator of ATSDR to establish a priority system for determining in what order, and for those not

required by this paragraph, at which CERCLA and RCRA sites health assessments shall be conducted. Highest priority shall be given to those sites at which all three of the following criteria apply: First, there exists documented evidence of release of hazardous constituents into the environment; second, the potential risk to human health as a result of the documented risk appears highest, and; third, in the Administrator's judgment, existing health survey data gathered at the given site and other similar sites are inadequate to assess the potential risk to human health posed by the site. The existence of these criteria, however, is not intended to require ATSDR to first survey the entire universe of sites in order to establish a ranking before choosing to conduct health assessments or other studies at individual sites.

Paragraph (3)(D) requires that the results of any health assessments conducted by States or political subdivisions be reported to the Administrator of ATSDR, and include recommendations for any further health-related activities which should be undertaken at the site. On the basis of a health assessment, findings and recommendations should also be made as to whether any immediate actions should be taken to protect human health under paragraph (7) of this section. The Administrator of ATSDR is directed to include similar findings and recommendations in any health assessments carried out directly by ATSDR. In addition, ATSDR is expected to issue periodic reports on the results of all health assessments conducted under this authority. One possible source of publication for these reports is the Morbidity and Mortality Weekly Report, published by the Centers for Disease Control.

Paragraph (3)(E) of the section defines "health assessments" and makes implicit reference to a standard four-step approach to site-specific health studies developed by the ATSDR. As described by Dr. James O. Mason, Administrator, ATSDR, before the Senate Environment and Public Works Committee on May 24, 1984, the first step is to assess the potential health hazard posed by a site on the basis of results of environmental sampling.

"Health assessments" are defined in the amendment to include a broad, overall examination of the release, site or facility and to assess its potential risk to the health of the nearby population. Health assessments should include:

First, a determination of the nature and extent of the release (e.g., the hazardous constituents and the amounts and concentrations in which they have been released).

Second, information on existing or potential pathways of human exposure to the release, including contaminated ground or surface water, air emissions, and contamination of the food chain.

Third, the size and potential susceptibility of the community within the existing or potential pathways of human exposure (e.g., the number of people, their ages and fitness, etc.).

Fourth, a comparison of observed (measured) or expected human exposure levels at the site with known short-term and long-term (acute and chronic) health effects associated with the identified hazardous substances and any available recommended exposure or tolerance limits for such contaminants.

Fifth, an analysis of available existing morbidity and mortality data for the population under study on diseases that may be associated with the observed levels of exposure, including comparison of observed versus expected morbidity and mortality rates where appropriate.

And sixth, an evaluation of the risks to the potentially affected population from all sources of the hazardous substance, including known point or nonpoint sources other than the site or facility in question.

ATSDR estimates the average cost of a health assessment ot be $4,000 per site. Under paragraph (3)(G), the costs of any health assessments or further health studies conducted at CERCLA or RCRA sites under this authority may be recovered under the provisions of section 107 of CERCLA from the owner or operator of such site or others physicially contributing to the release. If sources other than the RCRA or CERCLA site under study also contributed to the release, they would have to bear their share of liability.

Paragraph (4) provides that if, on the basis of a health assessment, potential for a serious health hazard is found, and if, in the judgement of the Administrator it is appropriate, a pilot epidemiologic study—cross-sectional or retrospective—of a group of people identified as the most highly exposed is undertaken. Control groups may also be included in the pilot study protocol. If the pilot study appears to validate the presence of excess morbidity or mortality, and if the Administrator of ATSDR believes it would be appropriate, the third step is to conduct a health study or full-scale epidemiologic study—including medical evaluations where indicated—of the entire affected population.

In determining whether to conduct a full-scale health study at a site, the Administrator should consider whether such a study would be scientifically feasible and also whether such a study would be useful to determine further, beyond what is known from health assessments, the nature and extent of potential health effects at the site. Another important consideration is whether scientifically valid studies have already been conducted in other situations or at other sites with similar conditions and exposures.

The average cost of a pilot is estimated by ATSDR at $30,000. Full-scale epidemiologic studies typically take more than six months to perform and cost in excess of $100,000.

Paragraph (5) provides that the Administrator shall consider whether the establishment of a registry of exposed persons at each site for which a health assessment has been completed is scientifically feasible and would contribute to the purpose of this subsection. Important considerations include the usefulness of such a registry, the seriousness or unique character of identified diseases or the likelihood of population migration from the affected area.

The issue of registries is one of the most difficult issues to address because of their costs, the mobility of the population, and the long-term commitment of resources to maintain the registries for 10, 20, 30 or more years. Exposure registries appear to be most valuable when persistent measurable levels of hazardous agents in which animal studies or other evidence predict significant toxic effects in humnas or for hazardous agents for which current methods exist to prevent an adverse outcome.

Because of the potential migration of the population, if sufficient evidence exists that it may be necessary to establish a registry in the future, it may be cost effective and reasonable for the Administrator of ATSDR to obtain identifying and locator information on the people currently exposed so that in the event a registry is determined to be useful, the Administrator of ATSDR will be able to locate and identify those individuals to place them on the registry. This initial list of exposed persons may included nothing more than a list of the exposed persons by name, address, date of birth, and some identifier, such as license number. Such a list would form the basis for the late establishment of a formal registry, if the Administrator determines that such a registry would be appropriate.

Under paragraph (6), the Administrator of STSDR is required to conduct a study and report to Congress within 2 years on the usefulness, cost, and potential implications of medical surveillance programs as part of the health studies authorized under this section. Medical surveillance programs are periodic screening programs to idenfity diseases in exposed populations with periodic medical testing and provide a mechanism of referring for treatment those who are diagnosed as having such disease.

Paragraph (7) provides that if a health assessment or other study conducted under paragraphs (3) or (4) contains a finding that the exposure presents a significant risk to human health, the President is required to take such steps as may be necessary to reduce such exposure and eliminate or substantially mitigate the risk to human health. This authority includes, but is not limited to, providing alternative water supplies, and permanent or temporary relocation of individuals. Most often, such decisions will be taken in response to acute risks and hazards, which are most likely to be detected by a health assessment or pilot epidmiologic study. As provided in section 102 of this bill, the provision of alternative water supplies, but is not limited to, drinking water and household water supplies.

Paragaph (8) clarifies that none of the health-related activities authorized in this section is to be construed to delay or otherwise affect or impair the ability of the Administrator of the EPA to exercise any authority under sections 104 or 106 of the Act or under section 7003 of the Solid Waste Disposal Act. This paragraph is necessary in order to assure that the public, EPA, ATSDR, or the President, does not use the health-related authorities as a means of impeding or delaying necessary clean-up activities at a site. In addition, this paragraph is meant to clarify that the internal peer review process for all studies conducted under this section, under paragraph (10), shall not preclude or prevent the EPA from taking emergency or other actions at a site if preliminary results of a study suggest that serious health hazards exist and must be mitigated, but before the full study can be released to the public.

Under paragraph (9)(A) of this subsection, the Administrator of ATSDR is required to prepare lists of the hazardous substances which present the most significant potential threat to human health either due to their common presence at sites or due to the potential toxicity of the compound. Within 6 months of the date of enactment a list of 100 such compounds will be prepared; within 24 months of enactment an additional 100 will be added. Further substances will be added as frequently as they are identified. Para-

graph (9)(C) requires the Administrator to look at what is known about the toxic material that is placed on the list and, if sufficient information is not available, to assure that a research program is begun to provide that information. Paragraph (9)(B) provides authority for research on methods to perform toxicologic testing for two or more compounds which exist together (i.e., mixtures, mixed disposal). These methods are not now generally available.

The Committee is concerned about the enormous toxicity data gap associated with industrial chemicals. A recent National Academy of Sciences Study of the adequacy of health effects data on chemicals found that about 80 percent have no toxicity data at all. The Environmental Protection Agency has testified that there is not enough health effects data on common organic chemical contaminants of drinking water to set standards for these contaminants. Many of these contaminants are associated with Superfund sites. The general dearth of health effects data on these chemicals is hindering the Agency's efforts to grapple with priority setting and cleanup standards in the Superfund program.

Paragraph (9)(B) also provides detailed guidance on the types of laboratory tests that may be required. Not all of these tests need to be done for each substance, but a phased approach to identify the hazards for each substance is necessary. Some substances will require very extensive work; others less work, or perhaps none at all. The Administrator should also undertake reserach on methods for detecting low-level exposure or markers of preclinical effects related to exposure to toxic substances and for evaluating sensitive indicators of exposure to such substances.

Paragraph (9)(D) provides that the research undertaken for these materials be coordinated with toxicologic testing and research that is conducted by the Environmental Protection Agency under the Toxic Substances Control Act and the Federal Insecticide, Fungicide, and Rodenticide Act. Some testing of chemical substances that may be listed by the Administrator is underway pursuant to the authorities of these statutes. These statutes provide authorities whereby the Environmental Protection Agency can require manufacturers and processors of chemical substances to perform the necessary health effects testing. The Administrator should also coordinate these efforts with those of the National Toxicology Program. The purpose of coordination is to avoid duplication of effort and to assure that listed substances are tested at the earliest practicable date. In coordinating research under this paragraph with toxicologic testing under other programs, the Administrator shall give due consideration to the differing goals and testing requirements of such other programs in determining the need for additional or different testing in order to meet the goals and requirements of CERCLA. The overriding consideration is to assure that tests are conducted expeditiously and, if rescourse to other authorities would result in more than minimal delay, work should be undertaken pursuant to the exposure Superfund authorities.

Paragraph (9)(E) expresses the sense of the Congress that the costs of research programs under this paragraph be borne by the manufacturers of the hazardous substance in question, as required in programs of toxicologic testing under the Toxic Substances Control Act. Where it is impractical to secure such funding from the

manufacturer, the costs of the required research programs should be borne by the parties responsible for the release of the hazardous substances in question. The costs of conducting such a research program are deemed to be eligible under section 107 of the Act for the purposes of recovery from a party responsible for a release of such hazardous substance. In particular, costs of such research should be sought from generators of the substance, rather than from transporters or disposal firms.

After completing research and review of all available information for each substances included on the list, the Administrator is required to publish, revise, and republish the information as necessary, but not less than once every 5 years, so that it will be available to the States and other interested parties. These toxicologic profiles are required by paragraph (9)(F), and should contain a succinct summary of the health effects of the substance or mixture of substances, in a style accessible and understandable to public health professionals who lack substantial training in toxicology, and with references to major clinical and research studies for those who can make use of them. Such profiles shall be prepared for all the substances listed under paragraph (9)(A), regardless of whether additional research on such substances is required to be initiated. Profiles on mixtures of substances shall also be prepared as such information becomes available. All these toxicologic profiles should be made as accessible as possible to Federal, State and local officials, as well as to health professionals. One means by which to provide ready access would be to have the profiles included in the National Library of Medicine computer system.

Paragraph (10) requires that ATSDR establish a mechanism of internal peer review for all studies (other than health assessments) and results of research conducted under this subsection. It is the intent of the paragraph to require such internal peer review of any and all such studies or results of research prior to their release to the public. It is recognized that time may not always permit, and the Administrator of ATSDR may not always find it appropriate to conduct, peer reviews of each individual site health assessment. Whenever conducted, the peer review shall be performed by panels consisting of no fewer than three and no more than seven disinterested scientific experts, selected by the Administrator of ATSDR on the basis of their scientific objectivity and a lack of institutional ties with any person involved in the conduct of the study or research under review. The support staff for the review panels shall come from ATSDR. Peer reviewers shall remain anonymous until such time as their findings are made known. After completion of the peer review process, the ATSDR will make the significance of the results known to the study participants (in the case of a health study). The background data, calculations, results, interpretations and conclusions of any and all studies and programs of research conducted under this authority shall be published as appropriate in peer reviewed scientific journals. In addition, summaries will be periodically published as supplements to the Morbidity and Mortality Weekly Report.

These peer review and reporting requirements are necessary in order to assure that sound and valid scientific work is performed and reported to the public, as well as to assure the objectivity and

credibility of the ATSDR. In addition, the ATSDR is expected to publish periodic reports of the results of health assessments and other studies which it conducts or oversees in order to provide further information on the overall extent and nature of the potential threat to public health posed by hazardous waste sites.

Under paragraph (11), the Administrator of ATSDR is authorized to establish a program for the education of physicians and other health professionals in the methods of diagnosis and treatment of injury or diseases related to exposure to toxic substances. The Administrator is to report back to the Congress not later than one year after the date of enactment on the implementation of this paragraph.

It is the intent of this authority to encourage the transfer of medical information to practicing physicians and other health professionals who are providing care to individual patients. There are several methods that may be used here, such as conferences, meetings, symposia, home study courses, short training courses, etc. In addition, training centers could be set up around the country. The Administrator should review all options which are authorized under this authority, determine the most cost effective, implement the, and report to the Congress. It is desirable here that plans be devised to provide the necessary information to the maximum number of practicing health professionals.

Under paragraph (12), to implement its authorities, the ATSDR must be provided with adequate personnel, but no fewer than 100 full-time equivalent employees [FTE's]. At the current time, ATSDR has 47 FTE's, which is an inadequate level. It is the intent of this amendment to provide increased personnel for the ATSDR without forcing a concomitant reduction in FTE's in other components of the Department of Health and Human Services.

Paragraph 13 grants authority to the ATSDR to enter into cooperative agreements with States or political subdivisions thereof for the purpose of delegating any or all of the functions of the ATSDR under this section and providing funding for the delegated functions, which may include the conduct of health assessments of RCRA and CERCLA sites, and the provision of health consultations. This cooperative agreement authority is modeled after similar authority provided under section 104(d), except that it allows such cooperative agreements to cover any or all of, but not necessarily limited to, the following: health consultations and assessments, health and epidemiologic studies, health referral systems, data collection systems, disease registries, and establishment of ongoing environmental health risk assessment programs. Other activities may also be delegated through cooperative agreements at the discretion of the Administrator of ATSDR.

This paragraph also amends section 111(c)(4) to clarify that all the expenses of ATSDR are to be paid out of Superfund. A new section 111(n) is added, making available not less than $18,000,000 for fiscal year 1985 and not less than 5 percent of the annual appropriation out of the Fund (or $50,000,000, which is less) for each fiscal year thereafter, directly to the Agency for Toxic Substances and Disease Registry. Funds which the ATSDR has not obligated by the beginning of their fourth quarter of the fiscal year in which made available are to be returned to the Trust Fund. These provi-

sions, however, shall not preclude the ATSDR from seeking and receiving additional funds from the Environmental Protection Agency under separate interagency agreements if the need for, and cost of, separate health studies exceeds ATSDR's budgeted capacity.

The reported bill adds a new section 3005(j) to subtitle C of the Solid Waste Disposal Act. It requires that owners and operators of landfills and surface impoundments submit to the Agency—or authorized State—as assessment of the potential for the public to be exposed to hazardous substances released from these units. The assessment must address reasonably forseeable potential releases from both normal operations and accidents. The former includes the steady release of small quantities of volatile chemicals into the air, and the seepage of waste constituents through clay liners. The latter results from abnormal operating conditions and includes fires, explosions, and major liner failures, as well as transportation accidents. Owners/operators are required to obtain reasonably ascertainable information of types of releases, the potential pathways of human exposure, the magnitude of the exposed population, and the nature and toxicity of the hazardous substances.

Owners/operators should already have access to most of the information required under this section. Regarding accident data, there are many reasons why such information should already have been compiled. Concern for worker safety, avoidance of plant shutdowns, and a desire to keep insurance premiums at a minimum all create an existing incentive for owners/operators to identify sources of potential accidents at their facilities and to take preventive measures to correct them. Thus, for example, it is a common practice for plant operators to identify existing hazards with the "standard checklist" method—see, for example, American Institute of Chemical Engineers, Fire and Explosion Guide, 1980. Where such assessments have been conducted, all that owners/operators need further do to comply with section 3005(j) is identify the potential pathways—for example air, surface water—for hazardous substances released during an accident, and the nature and magnitude of the release and the potentially exposed population.

Similarly, owners/operators should already have access to data on routine releases from their facilities. In order for insurance carriers to compute premiums for nonsudden liability coverage—as required under 40 CFR part 264—they often survey their client's facility to determine the risk of exposure of third parties to anticipated releases. Where insurance carriers provide this information to their clients, this should largely relieve owners/operators of the burden of developing the date required under section 3005(j).

This assessment must be submitted to the Agency—or an authorized State—either with the part B application or, for facilities for which a complete part B application has already been submitted, 9 months after enactment. However, submission of an adequate exposure assessment is not a condition for permit issuance; noncompliance with section 3005(j) is a separate violation of RCRA and should not be viewed as a vehicle to delay the permitting process. Furthermore, owners/operators should not postpone conducting the assessment in section 3006(j) in anticipation that EPA will subsequently promulgate regulations interpreting the statutory require-

ments. Congress believes that exposure assessments at facilities handling hazardous substances have become fairly routine and, therefore, the requirement in section 3005(j) needs no implementing regulation. Of course, EPA is not precluded from publishing an interpretive rule if it chooses to do so.

The EPA shall make all information collected under section 3005(j) available to the the ATSDR. If, in the opinion of the Administrator of the ATSDR, the Administrator of the EPA, or a State—in the case of a State with an authorized program—conditions exist which warrant a health assessment at a particular landfill or surface impoundment, such assessment, and any further necessary actions, shall be conducted by the ATSDR in accordance with the provisions of section 104(i) of CERCLA. A health assessment at a RCRA landfill or surface impoundment would be appropriate if the facility posed a substantial potential risk to human health for any one of a variety of reasons: the existence of actual releases of hazardous constituents; the magnitude of contamination with hazardous constituents which may be the result of a release, or; the magnitude of the population exposed to such release or contamination.

As reported, the bill also makes two technical amendments to existing statue. First, the bill clarifies that the ATSDR shall report directly to the Secretary of Health and Human Services, not to the Surgeon General. Second, the bill replaces the term "chromosomal testing" in current section 104(i)(4), with the phrase "appropriate testing."

Public Participation (Sec. 109)

SUMMARY

The reported bill adds a new subsection to section 104 which requires an opportunity for public comment before the Federal government or any State (operating under a cooperative agreement) selects a particular remedial action at any site or enters into any settlement agreement or otherwise disposes of any claim against any party under the Act, including entry of an order against such party. Notice to the public must be accompanied by a reasonable explanation of the proposed remedial action and major alternatives considered.

DISCUSSION

The support of communities affected by Superfund sites is important to the success of any cleanup plan. Affected communities will demonstrate stronger support for cleanup actions if they are involved from the outset in developing and selecting the actions necessary at the sites.

Therefore, this section of the bill requires the Environmental Protection Agency, working with the Department of Justice, to develop procedures for assuring that the public will be made aware of proposed remedies (including those to be implemented by the EPA, by States, and by private parties), as well as affording them the opportunity to comment upon that remedy or offer alternatives for consideration by the EPA or States prior to the final selection and implementation of the remedy.

In the case of a Fund-financed remedy undertaken by EPA or a State (acting through a cooperative agreement), this will mean publicizing and taking comment on the results of the Remedial Investigation and Feasibility Study before final selection of a remedial action. In the case of a remedy undertaken by responsible parties resulting from an enforcement action, this will mean publicizing and taking comment on the proposed remedy secured through negotiations with those parties before a consent order, decree or agreement becomes final.

In all cases, effective notice must first be given to the interested public. The notice must be accompanied by a discussion and analysis which provides a reasonable explanation to the interested public of the proposed remedial action and alternative proposals under consideration. The Federal government or State must then provide an opportunity for a public meeting in the affected area and a reasonable opportunity to comment on the proposed remedial action and alternatives. A comment period of 30 days would be proper in most instances.

When the remedial action is selected, the Administrator should make public the plan for the selected action, review comments received on the proposed plan and alternatives, and make any appropriate changes to the plan. A brief explanation to the community of why changes were made, or not made, may also be helpful.

If the remedial action proceeds in two or more distinct phases and separate studies and alternatives are developed at different times for different phases, the process of notice and opportunity for comment shall apply to each phase.

If the public is to make maximum use of a relatively brief comment period on the remedial plan, it must be well informed before that period begins. To this end, the Administrator should make data, studies, reports, and other information on the contents or conditions of the site and its likely effects on health and the environment, and any preliminary information on possible remedial actions and feasibility studies, promptly available at a central location near the site and accessible to interested members of the public. However, this must not become unreasonably burdensome for the Administrator, and the Administrator need not send every single datum or communication on the site to the central location.

The Environmental Protection Agency advised the Committee that this amendment is consistent with current Agency policies concerning community participation.

This provision should not impose excessive burdens on EPA. Reasonable time limits on the notice and comment period should assure that the final selection and implementation of the remedy is not unduly delayed. While this will require some additional time, adding some steps to the selection of any cleanup plan to provide public participation will engender public confidence and ultimately save both time and resources.

Love Canal Property Acquisition Amendment (Sec. 110)

SUMMARY

The reported bill adds a new subsection to section 104, which directs the Administrator of the Environmental Protection Agency to place a high priority on the purchase of the remaining properties in the Love Canal emergency declaration area in Niagara Falls, New York.

DISCUSSION

Under a 1980 agreement between the Federal Emergency Management Agency (FEMA) and the State of New York, funds are available to purchase all the owner-occupied homes in the Love Canal emergency declaration area. Non owner-occupied homes, commercial properties, community facilities, and vacant properties are not eligible for purchase under the FEMA-State agreement.

This section specifies that the Administrator use monies available under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 to purchase the remaining properties. The estimated cost of the properties involved is $4 million.

National Contingency Plan—Hazard Ranking System (Sec. 111)

SUMMARY

The reported bill adds two new subsections to section 105 of the Comprehensive Environmental Response, Compensation and Liability Act. New section 105(b) requires the President to revise the National Hazardous Substance Plan not later than twelve months after the date of enactment of these amendments to provide procedures and standards for remedial actions undertaken pursuant to CERCLA which are consistent with the amendments made by this Act.

New section 105(c) requires the President by rule, not later than twelve months after the date of enactment of these amendments, to promulgate amendments to the hazard ranking system in effect on September 1, 1984. These amendments shall assure, to the maximum extent feasible, that the hazard ranking system accurately assesses the relative degree of risk to human health and the environment posed by sites and facilities subject to review. These amendments shall take effect as of the date established by the President, not later than eighteen months after the enactment of the Superfund Amendments of 1984. The amended hazard ranking system shall be applied to any site or facility to be newly listed on the National Priority List after the effective date of the amendments. The hazard ranking system in effect on September 1, 1984, shall continue in full force and effect until the new regulations are in effect.

DISCUSSION

The President is directed to update the National Contingency Plan originally published for section 311 of the Clean Water Act so that the plan reflects the responsibilities and powers created by S.

2892. The original CERCLA legislation required the revision of the National Contingency Plan to add a new section giving some consistency and cohesiveness to response planning and actions for hazardous substance response actions. The Plan includes among other items:

(1) appropriate roles and responsibilities for Federal, State and local authorities and non-governmental entities;

(2) methods for discovering and investigating sites of disposed hazardous substances and in-place concentrations of such substances;

(3) methods and criteria for determining the appropriate extent of response measures;

(4) methods for evaluating remedial actions; and

(5) provision for obtaining prepositioning and maintaining necessary response capabilities.

After the revised plan reflecting the current amendments is published, removal and remedial actions should be in accordance with the Plan to the greatest extent possible.

The present hazard ranking system based on the so-called Mitre Model has been criticized for failing to assess accurately the relative degree of hazard posed by various sites and facilities. The purpose of the hazard ranking system is to indicate degree of hazard or risk in order to determine whether a site or facility should be placed on the National Priority List. In particular, the validity of the present hazard ranking system has been questioned for identifying the degree of hazard or risk posed by mining sites. The hazard ranking system appeared to identify the most hazardous constituent at a site, quantify the total amount of wastes at the site, then assume that all of the waste is comprised of the most hazardous constituent. This could introduce a bias in the hazard ranking system against large quantities of waste with the presence of trace toxic metals, such as typical mining wastes.

In order to determine whether such a bias exists and establish a system which accurately assesses the relative hazard in candidates for remedial action, the bill requires the hazard ranking system to be revised through a rule-making proceeding.

The provision is meant to deal with this problem without interfering with continued EPA progress toward assessing potential site hazards, listing sites, or beginning clean-up action. It would not affect any site or facility listed prior to the actual effective date of the new hazard ranking system, nor would it require the ranking or listing of any site or facility to be delayed. But by assuring greater accuracy in the hazard ranking system, highest priority attention would be focused on the sites posing genuinely the greatest danger.

The amendment meets this objective by (1) setting up a review and public comment procedure and requiring promulgation of revisions in one year; (2) assuring that the new system will go into effect by a date established by the President, to be not later than 18 months after enactment; (3) establishing a substantive standard for the hazard ranking system that to the maximum extent feasible is an accurate assessment of the relative degree of risk to human health and the environment of the sites to be reviewed; and (4) leaving the present hazard ranking system in operation until the

more accurate hazard ranking system can be put into effect for sites to be listed theraftер.

State and Local Government Liability (Sec. 112)

SUMMARY

The reported bill amends section 107(d) to modify the potential liability of State and local governments that respond to emergencies created by the release of a hazardous substance, pollutant or contaminant generated by or from a facility owned by another person. State or local governments shall not be liable for costs and damages as a result of non-negligent actions taken in response to such emergencies.

DISCUSSION

Under current law, there may be disincentive for State and local governments to respond to emergencies covered by CERCLA because the same liability standards may be applied to these entities as is applied to private parties who are responsible for a spill or other release of a hazardous substance, pollutant or contaminant.

Under this amendment, when a State or local government takes an emergency action to abate a hazard in a non-negligent way, that government will not be subject to the liability provisions applicable to the parties that created the hazard.

Contractor Indemnification (Sec. 113)

SUMMARY

This section amends section 107(e) of the Act to authorize the Administrator to provide indemnification to contractors who are engaged by the Agency or the States to respond to the release of hazardous substances, against potential liability that might arise as a result of their actions.

DISCUSSION

The potential for being held jointly and severally liable for injury or property damage under existing law may discourage competent contractors who would otherwise offer their services and expertise to respond to releases at specific sites.

Indemnification under this provision may cover claims for death, bodily injury and property damage, and may include the expenses of litigation that would arise as a result of the contractor's conducting activities under contract with the Agency or the States. Indemnification cannot extend to contractors where the injury or damage was caused by a negligent action of the contractor.

The decision to extend such indemnification is descretionary with the Administrator. Indemnification does not arise without a specific contractual arrangement that extends such protection.

VICTIM ASSISTANCE DEMONSTRATION PROGRAM (SEC. 114)

SUMMARY

S. 2892, as reported, establishes a five-year, five-State demonstration program of administrative assistance for the victims of released hazardous substances.

Subsection (a) of this section adds the victim assistance grant program to the list of permissible Fund uses contained in section 111(c) of the law. It authorizes up to $30,000,000 per year in grants to States to establish and maintain the victim assistance programs. It requires that the programs compensate individuals for injuries resulting from exposure to the release (as that term is defined in section 101(22) of the law) of a hazardous substance (as defined in section 101(14)).

Subsection (b) adds a new subsection to section 111 setting out the victim assistance demonstration program. New subsection (m)(1) authorizes the Administrator to select five States. Selection must be made "upon application", thus assuring that the initiative must be taken by the States themselves. The Administrator cannot, however, decline to select any State if one or more has applied, nor may the Administrator select fewer than five States if five or more apply. Selection, once applications have been submitted, is a non-discretionary duty. Grants to each State must be for not less than $3,000,000 and not more than $18,000,000 per year for each of the fiscal years 1986, 1987, 1988, 1989, and 1990. The selection of one State rather than another is within the sole discretion of the Administrator. However, in making the selection, the Administrator must take into account the following criteria:

1. The experience of State and local governments in administering programs which deal with the regulation of toxic chemicals.

2. The existence of and experience with a statutory scheme of response and liability of breadth similar to this Act.

3. The representative nature of the hazardous substance releases and exposures in terms of the identities and toxic characteristics of the substances found, the manner and degree of exposures, and the seriousness and duration of the diseases or illnesses caused.

While the Administrator may exercise discretion in the selection of recipient States under paragraph (2), every program funded under this subsection must, at a minimum, provide for the following:

In the case of the population of any area or class of individuals in which no solvent responsible party who may be liable under section 107 is paying compensation for claims or providing assistance, comparable to assistance under this subsection, nor has such a party accepted liability for such claims or assistance, and where the State determines, based on available information (including that submitted by members of such population or class or developed under section 104(i)), that—

1. Exposure to a hazardous substance in a release has caused injury, illness, or disease (e.g., where the cause has actually been demonstrated in a particular case, which might include

where exposure to dioxin has caused acute urinary tract dysfunction);

2. The population or class has been exposed to a hazardous substance in a release and a peer-reviewed epidemiological or other health study demonstrates a positive correlation between such exposure and an adverse health effect in such population or class (e.g., where residents can demonstrate that for a period of years they consumed well water which was contaminated by a variety of hazardous substances and a peer-reviewed epidemiological health study conducted by the school of public health of a major university demonstrates a positive correlation between consumption of the drinking water and illnesses, including pediatric leukemia, bladder cancer, and birth defects);

3. The population or class has been exposed to a hazardous substance in a release and there is evidence that members of the population or class have adverse health effects which enter remission when exposure is temporarily eliminated (e.g., where children who live in the proximity of a hazardous waste disposal site suffer from and are treated for recurrent upper respiratory infections but, when on vacation in another location, do not suffer from such recurrent infections); or

4. Members of the population or class have an injury, illness, or diseases which is only associated with exposure to a particular hazardous substance (and where such injury, illness or disease cannot be attributed to exposure in the workplace) (e.g., where the family members or workers in a shipyard suffer from mesothelioma), then assistance described in subparagraph (B) must be made available.

Under paragraph (2)(B), for each member of a population meeting one or more of the qualifying criteria contained in (A), the State program must provide at a minimum the following assistance:

1. A group insurance policy providing burial benefits, where death is reasonably related to the injury, illness, or disease associated with exposure to a hazardous substance in a release. Burial benefits may be used for cremation as well.

2. A group medical benefits insurance policy providing the reasonable costs of all medical and surgical treatment and hospitalization, excluding treatment or hospitalization solely arising from accidental injury, routine pregnancy and well baby care, and subject to an annual deductible of $500, with no copayment requirement or annual or lifetime limitation on expenditures.

3. A group disability insurance policy, for those members of the population or class currently employed or with a history of employment.

The benefits available under this assistance program are to be secondary to benefits provided under other policies running in favor of such individuals. Thus, primary reliance will be on insurance available through a worker's place of employment. However, if such insurance requires a copayment assistance under this program will provide copayment reimbursement. Similarly, a worker

who pierces the lifetime limit of his policy is to be held harmless by the assistance provided under this section.

Assistance provided under this section must be conditioned on agreement that the payments made will be reimbursed in the event there is a settlement with or judgment against a responsible party.

DISCUSSION

This amendment will assure that when extension of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, is next considered, the Congress will have information required to make reasoned judgments on the issue of victim compensation, a subject which is unusually susceptible on all sides to emotionalism and predjudice.

The subject of administrative compensation for the victims of hazardous substances and toxic chemicals is one which has been before the Congress since the mid-1970's, when the Clean Water Act was amended to provide a response program for environmental emergencies. The oil and chemical Superfund bill reported by the Committee on Environment and Public Works during the 94th Congress (which passed the Senate, but failed of enactment), S. 2900, contained an administrative assistance program, as did the Superfund bill reported from Committee in 1980. When the 1980 legislation was brought to the Senate floor, however, an agreement was reached which eliminated the victim assistance program and required a study of the adequacy of existing remedies to compensate persons injured by exposure to the release of toxic substances into the environment.

The study requirement is contained in section 301(e) of the current law. Pursuant to that section, three representatives of each of four major legal organizations were appointed to form what became known informally as "The 301(e) Study Group." The four organizations contributing members to the study group were the American Bar Association, the American Law Institute, the American Trial Lawyers Association, and the National Association of Attorneys General.

The Study Group submitted its report to the Congress on July 1, 1982. Having been charged with the responsibility of determining "the adequacy of existing common law and statutory remedies in providing legal redress for harm to man and the environment caused the release of hazardous substances to the environment," the Group made ten recommendations. One of these was that a system of administrative compensation be established:

> First Recommendation: Federal Administrative Compensation and State Judicial Remedies:
>
> In light of the limited availability and the inadequacy in many situations of existing remedies, and particularly in light of the inadequacy of the present tort system to deal with relatively small claims, the Study Group recommends a remedial program that is intended to provide means of recovery for victims of exposure to hazardous wastes, utilizing both administrative and judicial remedies, as may be appropriate.

> In broad outline, the Study Group recommends a two-tier system of remedies. The first tier, whih is expected to be the part of the system most heavily relied on by persons injured by exposures, will provide an administrative compensation remedy without a showing of fault. The administrative compensation scheme would be established by federal legislation, but would be operated largely by the states pursuant to federal law. Its major purposes would include the provision of limited compensation to meet the economic and medical needs of persons injured in a manner which is more prompt and less costly than tort litigation. Such a compensation system would also provide a useful method of cost allocation and sharing, and a socially responsible method of internalizing the emerging costs of industrial and technological development.

The amendment contained in S. 2892 does not fully implement this recommendation of the Study Group. Rather, it establishes a $30 million per year grant program to encourage States to implement the recommendation. Although the grants for such programs will be available from the Superfund, the actual establishment will be by the States themselves. If no State chooses to establish such a program, then no grants will be made.

The criteria for selecting State programs are established to accomplish particular purposes.

States with experience in administering toxic chemical regulatory programs are to be preferred, in part, because of their familiarity with the dangers which chemicals can pose, both by themselves and in combination with others and, in part, because of their knowledge of the multiplicity of potential exposures and pathways.

Subsection (m)(1)(B) will assure that the information developed will be relevant in the event consideration is given to amending the Comprehensive Environmental response, Compensation and Liability Act of 1980, at some future date to adopt an administrative victim compensation regime throughout the United States.

New Subparagraph (C) is to assure that the information developed will have broad applicability to situations which exist in other States so that solutions can be sought to the most serious and most common problems.

The classes described in paragraph (2) are the minimum acceptable elements of an eligible compensation program. A State may have a program which compensates broader classes of individuals or it may have more liberal terms of eligibility, but it may not have less than that described in paragraph (2). Those elements of a program which involve exposures other than the releases of hazardous substances are ineligible for grant assistance, but their existence does not in any way disqualify a program or cause it to be treated less favorably than competing applicants.

Assistance may be provided through the purchase of a commercial policy of group health insurance or through the purchase of membership in a group health organization. While accidental injuries are not to be generally covered, those which bear a reasonable relationship to the illness or disease should be within the scope of the policy. Unlike accidents, however, all illnesses are to be cov-

ered because to provide otherwise would create a system of adverse selection in which the private insurance market would not participate.

Fund Use Outside Federal Property Boundaries (Sec. 115)

SUMMARY

The reported bill amends section 111(e)(3) of the Act to provide that the Fund can be used to pay for alternative water supplies in cases involving federally owned facilities, where groundwater contamination exists beyond the Federal property boundary and the federally owned facility is not the only potentially responsible party. This would include reimbursement of funds already spent by a municipality.

DISCUSSION

Current law prohibits the use of funds from the Hazardous Substances Response Trust Fund for remedial action at sites where the potentially responsible parties include an agency or department of the Federal Government. Congress intended that costs at such sites should be born by the agencies responsible through appropriated funds, rather than from the trust fund derived from taxes on the chemical manufacturing industry.

This prohibition has caused considerable hardship at many sites across the Nation because Federal agencies have been slow to respond in cases where they are responsible. The Committee has been made aware of the problems at specific sites which have required immediate response with State and local resources to provide a alternative water supplies. In cases such as New Brighton, Minnesota, responses to protect the public health have required the expenditure of several millon dollars by a local government with no opportunity to recover these expenses from the reponsible Federal agency in the foreseeable future.

The language of this section would make a limited modification in the current prohibition. It would allow use of monies from the fund to respond at sites where the potentially resonsible parties include an agency of the Federal govenment but also include other non-Federal parties. At such sites, the fund may be used to provide alternative water supplies and to reimburse municipalities to the extent that they have incurred costs to make available alternative water supplies.

Statute of Limitations (Sec. 116)

SUMMARY

The reported bill amends section 112(d) to clearly extend the statute of limitations for filing claims against the Superfund or responsible parties for damages to natural resources, until the date three years following the promulgation of damage assessment regulations by the Environmental Protection Agency and the Department of the Interior, or three years following the date of discovery of the loss, whichever is later. The provision also makes clear that

claims for response costs may be presented until three years after the completion of the response acton.

DISCUSSION

The natural resources compensation provisions of the current law allow the Federal Government or any State to act as a public trustee and seek compensation for damages to forests, fish, wildlife, waters and other natural resources. Compensation gained through natural resources damage claims are to be used to restore or replace these damaged resurces around contaminated sites.

The statute of limitations for claims preexisting the 1980 Act may have expired in December, 1983. At that time, fifty-seven claims had been submitted to the Superfund. The Environmental Protection Agency determined that all of the claims had been improperly filed. Extension of the statute of limitations will allow these claims to be filed in accordance with the anticipated regulations. The extension wll also allow future claims to be filed.

JUDICIAL REVIEW (SEC. 117)

SUMMARY

This section revises the provisions of section 113(a) governing the judicial review of regulations promulgated pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

New section 113(a)(1) provides that an application for review of a CERCLA regulation may be filed in the U.S. Circuit Court for the District of Columbia or in the U.S. Court of Appeals for a circuit in which the applicant resides or transacts business whichis directly affected by such regulation within one hundred and twenty days after such regulation is promulgated. Under current law, judicial review may only be had in the U.S. Circuit Court of Appeals for the District of Columbia, and applications for review must be filed within ninety days.

New section 113(a)(2) establishes a random selection procedure, to be administered by the Administrative Office of the United States Courts, to determine in an orderly fashion the court of appeals in which a regulation is to be reviewed when applications for review have been filed in two or more courts of appeals.

Following the selection of a single court of appeals, other courts in which applications have been filed are directed to promptly transfer such applications to the court in which the Agency record has been filed. Notwithstanding the outcome of the random selection procedure, any court in which an application for review has been filed would retain the power to transfer the case to any other court of appeals for the convenience of the parties or otherwise in the interest of justice.

DISCUSSION

The principal purpose of this amendment is to allow the filing of applications for review of CERCLA regulations in U.S. Courts of Appeals other than the U.S. Court of Appeals for the District of Co-

lumbia, which currently has exclusive jurisdiction over such applications.

The justification for centralized judicial review of environmental regulations is that it eliminates the possibility of conflicting interpretations of the law in different circuits and allows a single court to develop expertise in this complex area of the law. However, in the judgment of the Committee these advantages, to the extent they exist, are insufficient to offset the disadvantages of centralized judicial review, which include inconvenience to litigants who do not reside in Washington, D.C. and an unwarranted concentration of power in a single tribunal, which may in turn generate undersirable political pressures on the appointment of judges. Centralizing review in a single court may also deprive the law of diverse views on complex legal issues, and as a result may make the task of the Supreme Court more difficult.

Although other Circuit Courts of Appeal may not possess as much technical expertise as the D.C. Circuit, the responsibility of a Court of Appeals is to review regulations for conformity with law, not to undertake technical review of regulations and the Committee has no reason to believe that other Courts of Appeal lack competence to review regulations promulgated under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

The random selection process created by section 107(a)(2) is intended to avoid the "race to the courthouse" phenomenon and provide for an orderly means of consolidating applications for review of the same Agency action. This process does not preclude any court of appeals from exercising its inherent power of transferring an application for review to any other court of appeals for the convenience of the parties or otherwise in the interest of justice.

The amendment also changes the period within which an application for review of any Agency action must be filed from ninety to one hundred and twenty days. In view of the seriousness of the possible consequences of a failure to challenge an action of the Administrator within the prescribed time period, persons who will be directly affected by a regulation should have ample opportunity to assess the consequences of such regulation and file an application for review. A period of one hundred and twenty days provides such an opportunity.

Clarification of Preemption Language (Sec. 118)

SUMMARY

This section amends section 114(c) of the Act by inserting a clarification of the original intent of this provision. It clarifies purposes for which States may raise their own dedicated funds for the management and cleanup of hazardous materials. The addition makes clear that in no way are States prohibited from using special taxes to raise their own funds if the funds are expended for costs at Superfund sites under section 104(c)(3) (and advance obligations of the Federal share if the conditions of section 104 (c)(3) and (d)(1) are met). It also includes the costs of responses supplemental in number or degree to those taken under the Fund. State manage-

ment activities for hazardous substance purograms would also be appropriate.

DISCUSSION

Clarification of section 114(c) appears desirable because of the litigation that has arisen from the original language in the statute. The litigation has been focused on the right of States to tax those substances which are taxed under the Federal Superfund law. To date, all decisions in State courts (including recent State Supreme Court rulings) have found that the Federal Superfund law does not preempt the rights of the States to raise taxes from these substances or through other special taxes. This litigation could continue for years. Any cloud of uncertainty over the legitimacy of these taxes should be removed at the earliest possible time.

It is widely recognized that States must develop their own taxes to meet their responsibilities for the State share of the cleanup costs at Superfund sites. In addition, States have responsibilities for managing and cleaning up hazardous materials not covered by the Federal program. Clarification of section 114(c) will allow the States to move forward and develop the tax mechanisms necessary for meeting the growing funding needs for response to hazardous substance releases and participation in the Superfund program, as well as for maintaining effective State hazardous waste programs.

Federal Facilities (Sec. 119)

SUMMARY

This section amends section 115 of the Act to provide that the Administrator of the Environmental Protection Agency must concur in the selection of cleanup actions to be taken for Federal facilities. States that have entered into cooperative agreements with the EPA must also concur in the selection of cleanup actions. In addition, the administrative order authority of section 106 is statutorily delegated to the Administrator with respect to Federal facilities.

DISCUSSION

Federal agencies have not always been responsive to the problems of hazardous substance releases, and adequate corrective measures have not been taken at many Federal facilities. This has particularly been a concern for the Department of Defense facilities, for which the President by Executive Order delegated all authorities under CERCLA to the Secretary of Defense. This new section requires Federal agencies to respond to hazardous substance releases and assures that EPA retains the lead repsonsibility for cleanup actions. For Defense facilities, or others for which such delegation occurs, the EPA must concur in the selection of an adequate remedial action, and can order appropriate corrective action.

ADMINISTRATIVE CONFERENCE RECOMMENDATION (SEC. 120)

SUMMARY

This section would establish a congressional finding that Recommendation 84-4 of the Administrative Conference of the United States is generally consistent with the goals and purposes of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and would direct the Administrator of the Environmental Protection Agency (EPA) to consider such Recommendation and implement it to the extent that so doing will expedite the cleanup of hazardous substances which have been released into the environment.

DISCUSSION

Recommendation 84-4 of the Administrative Conference of the United States consists of a series of steps that the EPA might take to encourage and facilitate negotiated private party cleanup of hazardous substances, in those situations where negotiations have a realistic chance of success. The purpose of encouraging such negotiated cleanups is to accelerate the rate of cleanup while reducing its expense by tapping the technical and financial resources of the private sector. However, the greater emphasis on negotiated cleanups that is recommended is not to replace or diminish an aggressive enforcement policy, but rather to complement it.

Implementation of the Administrative Conference recommendation does not require amendment to CERCLA, as it is also the belief of the Committee that Recommendation 84-4 is consistent with the goals and purposes of the Act.

Decisions how and to what extent to implement Recommendation 84-4 are within the discretion of the Administrator. The Adminstrator should pursue negotiated cleanups to the extent that negotation promises to expedite the overall cleanup effort, and not in cases in which negotiation is unlikely to be productive.

Recommendation 84-4 follows.

ADMINISTRATIVE CONFERENCE OF THE UNITED STATES
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OFFICE OF
THE CHAIRMAN

Recommendation 84-4

NEGOTIATED CLEANUP OF HAZARDOUS WASTE SITES UNDER CERCLA

(Adopted June 29, 1983)

By enacting the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) in 1980, Congress undertook to provide a federal solution for the problem of abandoned and inactive hazardous waste disposal sites. Approximately 2,000 sites will require action, at a cost of tens of billions of dollars. CERCLA created a $1.6 billion revolving "Superfund" for direct federal action to clean up these sites and respond to hazardous waste emergencies. The act supplements this public works authority with provisions for negotiating cleanups by "potentially responsible parties" — site owners and operators and users of sites such as transporters and waste generators. It also empowers the federal government to sue such parties for the cost of cleanups paid for out of the Superfund and, if waste disposal may present an "imminent and substantial endangerment," to sue for orders directing responsible parties to clean up sites themselves. The act is administered by the Environmental Protection Agency (EPA).

By early 1984, although EPA had responded to hazardous waste emergencies at many sites, only a handful of sites listed on a statutory national priority list by the agency had been completely cleaned up by the federal government. A few more sites had been cleaned up by private parties. The causes of delay were varied: uncertainty about the extent of the problem and the efficacy of technical remedies; start-up problems inherent in a new program; and a two-year long effort to negotiate cleanups so that no Superfund revenues would have to be spent. By mid-1983, the strategy of conserving the Superfund had fallen apart amidst a major leadership crisis within the EPA. In a policy reversal, Superfund expenditures for cleaning up sites then took priority over other means available under the statute for effecting cleanups.

The current agency approach to CERCLA emphasizes cleanups paid for out of the Superfund coupled with actions to recover the expenditures but also relies to a limited extent on negotiated cleanups and on lawsuits to compel responsible parties to act under CERCLA's imminent endangerment provision. This strategy has resulted in a CERCLA implementation effort that is slow and expensive.

Congress, the EPA, responsible parties, and other critics have suggested several means of speeding up and economizing on site cleanups. These include enlarging the Superfund, setting program deadlines, expanding the EPA program offices, empowering citizens to sue, and encouraging voluntary cleanup by industry. Although enlarging the Fund, providing more staff, and setting program deadlines would tend to accelerate the CERCLA effort, the Administrative Conference believes that a properly designed site cleanup negotiation process, through which responsible parties or third parties would agree to act directly to clean up sites, would also hasten cleanup while reducing its expense by tapping the technical and financial resources of the private sector. Involvement of the federal government and affected citizens in this process would ensure adequate protection of public health and the environment.

Although current EPA policy permits the negotiation of cleanups, the agency puts too little stress on negotiations and has adopted a series of procedural and substantive requirements that unnecessarily constrict the number of negotiated cleanup agreements that the agency might beneficially conclude. The Conference recognizes, of course, that successful negotiations can only occur when private parties as well as the federal government are willing to respond to the problem of hazardous waste cleanup in good faith. The Conference intends no criticism of aggressive EPA enforcement efforts where responsible parties refuse to cooperate.

In this recommendation the Administrative Conference suggests a series of steps that the EPA might take to encourage and facilitate greater reliance on negotiated private party cleanups, in those situations where negotiations have a realistic chance of success.

RECOMMENDATION

1. The Environmental Protection Agency (EPA) should emphasize the negotiation of voluntary cleanups at hazardous waste dump sites. The negotiation process for any site should include, at an appropriate time and in an appropriate manner, the key interests, such as federal, state and local governments, parties potentially responsible for cleanup (including site users, site owners and operators, and waste transporters), and local citizens. Whenever possible, efforts to negotiate a cleanup agreement should begin well before the commencement of litigation concerning a site. To increase the likelihood that negotiations will succeed, the Administrator and other leading EPA officials, both at headquarters and in the regional offices, should support the negotiation process, follow its implementation, and be available to explain specific negotiated agreements before congressional oversight committees if necessary.

2. Citizens living in the vicinity of or otherwise directly affected by a site have a substantial interest in some issues related to the cleanup process — for example, medical diagnostic testing, relocation of public service facilities, measures to isolate the site, and the overall adequacy of the cleanup effort. Their interest in other aspects of the process, such as the allocation of costs among potentially responsible parties (or between potentially responsible parties and the government) is more problematic. EPA should consider means beyond complete reliance on local political institutions for involving these citizens, including the negotiation of collateral arrangements, participation of citizens' groups in negotiations over the type and scope of the remedy, and the like. Even if not participants, local citizens ordinarily should be permitted to observe those aspects of the negotiations that concern them.

3. Many negotiations can be conducted by EPA without outside assistance. In other cases, where outside assistance is desirable, EPA should encourage efforts by independent mediating organizations or individuals to convene negotiations. This can be accomplished by asking such a convenor at an early stage — no later than the commencement of "remedial investigations and feasibility studies" (a statutory cleanup stage) — to determine whether conditions are favorable for negotiations at a site. Favorable conditions include: issues that are ripe for decision; absence of fundamental conflict about values among those with a stake in the outcome; adequate representation and organization of key interests; opportunity for mutual gain for those with a stake; a balance of power among participants; willingness to bargain in good faith and share information; and willingness of units of government to participate as equal parties.

Where negotiation appears feasible, the convenor should attempt to organize a site negotiation group from among the parties with a stake in the site cleanup. If an initial meeting of the parties is successful, the participants should consider retaining the convenor or another person to serve as mediator for the duration of negotiations. EPA should consider using Superfund resources to support an entity, such as a non-profit corporation or another agency, that would undertake this initial convening effort and provide mediation services if the parties desired them. Alternatively, EPA should consider providing these services through personal service contracts with skilled mediators.

4. In order to take advantage of private funds and expertise while they remain available, EPA should encourage and participate in negotiations for cleanup of sites where there is a high likelihood of successful negotiations, even if they have not yet been allocated federal funding for remedial investigations or been added to the National Priority List, unless such negotiations will distort the agency's priorities by diverting substantial agency resources or causing undue delay.

5. EPA should avoid wasting agency resources on unproductive negotiations by establishing, with the concurrence of other negotiating parties, reasonable deadlines for the conclusion of negotiations.

6. Successful negotiation requires that participation by all interests be through persons who, if not principals, have the confidence of, and easy access to, principals with the authority to make binding commitments. For EPA, the negotiators or persons readily accessible to the negotiators should have explicit, broad delegated authority to commit the agency to a negotiated outcome. To the extent that peer review and approval of agreements within the agency are nonetheless required, EPA should provide expedited means for obtaining them. One method of achieving this end would be for EPA headquarters to consolidate review of negotiated cleanups in a single panel of key officials.

7. The final agreement should take the form of an administrative consent order under section 106 of CERCLA or a judicial consent decree. Like other parties to the agreement, EPA should bind itself to undertake appropriate actions and follow agreed-upon schedules.

8. Negotiations undertaken in the context of litigation require procedures and standards different from the procedures and standards applicable to negotiations occurring before a matter reaches litigation. EPA should acknowledge that existing agency guidance memoranda on "case settlement policy" are appropriate for use only in litigation situations; to implement the proposed negotiation process, the agency should prepare new guidance memoranda that bring more appropriate factors to bear on pre-litigation negotiations.

9. The Conference recognizes EPA's need to maintain a strong litigation posture in CERCLA cases in order to strengthen its ability to negotiate agreements in the public interest. However, the Conference also urges the agency to consider the possible advantages of greater flexibility in situations where cleanup arrangements are being negotiated rather than litigated. For example, in some cases it might be desirable for EPA to begin to negotiate even if 80% of cleanup costs has not been offered or to agree with the parties about the amounts of their individual responsibilities to pay cleanup costs even if the total responsibility adds up to less than 100 percent of cleanup costs (allocating Superfund resources to pay for the rest), as an incentive for cooperating parties to join promptly in an agreement. The intransigence of a few responsible parties

should not be permitted to block agreement with others prepared to accept reasonable shares of responsibility; moreover, such partial agreements may free agency resources to pursue the intransigent parties.

10. Although the Conference believes that its recommendation can be implemented without additional legislation, it acknowledges that the effectiveness of expanded reliance on negotiated clearups would depend upon the degree of support or opposition from relevant congressional committees. If EPA undertakes efforts to clean up dump sites through a negotiation process like that described in this recommendation, congressional committees should support and encourage these efforts, recognizing that negotiated solutions inevitably involve compromises.

11. To promote achievement of its site cleanup management objectives, EPA should publish statements of its CERCLA policies, such as conditions for undertaking voluntary cleanup negotiations, procedures for public involvement in site cleanup decisions, and site study criteria, in the Federal Register and allow for public comment.

TITLE II

SUMMARY

As amended, S. 2892 reauthorizes the Superfund program for five years at $7.5 billion. Under current law, the Fund is supported by a dedicated tax on crude oil and certain specific chemical feedstocks, from which the thousands of other chemicals in commerce are derived. In 1980, the Committee reported a bill which included not only a list of recommended taxable substances, but rates as well. In reporting S. 2892, however, the Committee chose to include the list of substances taxable under current law, but not to recommend specific rates.

The Committee chose this course of action partially in deference to the acknowledged jurisdiction of the Committee on Finance over the tax aspects of S. 2892. A more important and compelling reason for the Committee's action, however, was a broad consensus among Members against exclusive reliance on the current feedstock taxing mechanism for supporting an expanded Superfund program. It is the Committee's view that the current taxing mechanism must be reexamined, within the constraints of available time allowing action this year, and, if at all possible, revised and supplemented to assure that the tax burden is shared by a broader class of chemical producers and consumers. The taxing structure should also be amended in such a way that it avoids placing domestic manufacturers of chemicals and chemical products at a competitive disadvantage with respect to foreign companies, both as to sales in the United States and as to sales abroad. Finally, the taxing system should be made more equitable, by allocating the financial burden of the Superfund program to the industries and companies which have created the problems making Superfund necessary.

In a search for one or more taxing mechanisms which satisfies these concerns, the Committee developed information on a number of alternatives. Generally, the alternatives fall into the following categories.

1. *Those which would continue to place the financial burdens on crude oil and chemical feedstocks.*—Alternatives suggested to the Committee include several different methods of amending the existing feedstock mechanism to make it more equitable and to avoid anti-competitive impacts. Specifically, the following possible changes were suggested:

a. An increase in the crude oil tax.

b. Expansion of the feedstock list to include substances which are not now taxed, but which are found at Superfund sites.

c. Changes in the feedstock tax rates based on the frequency with which chemicals made from each feedstock are found at Superfund sites. This would result in both a substantial reduc-

tion for some feedstocks (e.g., ethylene) and sharp increases for others (e.g., chlorine). The Committee also collected information on the possibility of moderating the impact of such a "fair share" system by capping resulting price increases.

d. Shifting the tax on certain feedstocks (e.g., ethylene and propylene) to primary and secondary derivatives, both to lessen international competitive problems and to make the tax more equitable.

2. *Those which would continue to tax responsible industries, but change the taxing method.*—The feedstock tax was selected in 1980 in part because of a belief that it would be passed on to the consumers of chemicals. It was also adopted, however, because the Congress was unable to develop alternatives which, from a policy perspective, were more attractive. In the ensuing four years, regulatory programs have developed that might now make it possible to do what could not be done in 1980. In addition, a large number of industries and individual companies have intensively examined alternative taxing mechanisms, so that much more information on these approaches is available today than in 1980. These alternatives include the following:

a. Adoption of a "waste end" tax, either on waste as it is generated or as it is stored, treated or disposed; and it could distinguish between types of disposal and treatment. Also, such a tax could be placed exclusively on wastes subject to the regulatory program of subtitle C of the Solid Waste Disposal Act (the wastes typically described by the term "hazardous wastes") or on wastes generally, without regard to which of the environmental laws regulates their disposal (e.g., underground injection of wastes pursuant to the Safe Drinking Water Act or discharge of wastes into navigable waters pursuant to the Clean Water Act). A waste end tax is considered by some Members to be attractive from a policy perspective as an incentive to waste reduction or safer waste management.

A waste end tax could also be extended to include solid wastes as well as hazardous wastes. Proponents of such an approach (commonly referred to as a "tipping" fee) observe that solid waste disposal sites have been responded to under Superfund and that household and industrial refuse contains some hazardous materials.

b. Imposition of a tax on the manufacture of toxic chemicals based on the frequency with which they are found at Superfund response sites. There are many toxic substances which are found frequently at Superfund sites. (For example, trichlorethylene, which causes cancer in animals, is found at roughly one-quarter of the sites). Thus, one option is to tax the manufacturers of such chemicals at rates which vary according to the frequency with which they are encountered at Superfund sites.

c. Taxation of the transportation of hazardous substances or chemicals. Taxing the movement of hazardous chemicals apparently could raise considerable sums of money, but it might also cause substantial inter-modal impact (e.g., causing a shift from transport by truck to transport by rail, etc.).

d. Expand the tax base to include broad industrial segments which consume, transport, manufacture or dispose of hazardous chemicals. Under current law, roughly one-eighth of the Superfund is derived from general revenue. A number of groups have suggested tax approaches which would be similar to general revenue, on the grounds that society as a whole has contributed to the release of toxic chemicals. The Committee was presented with information on two different mechanisms for increasing the Fund in a manner similar to the general revenue contribution: a corporate net receipts tax; and, a corporate income tax surcharge. The difference between these two approaches is that one would tax businesses on the basis of profitability while the other would tax on the basis of business volume. Each would spread the tax burden over a very broad segment of the economy, thus requiring tax rates which are quite low. Likewise, each could be focused on sectors of the economy such as manufacturing, mining, etc. which would bring the tax base closer to the principle of the 1980 law, namely that those who most directly caused the problem should pay fot its solution.

e. Expansion of the general revenue share. Some have also suggested that since society as a whole benefited from the products and activities which created the need for Superfund, the general revenue contribution should be increased. This could be without recourse to a special taxing mechanism such as a corporate tax surcharge or a new receipts tax.

3. *Those which would correct the anti-competitive impacts of a tax system.*—Under the current law, chemicals mined or manufactured in the United States are subject to the tax, as well as those imported, but those derivatives and products manufactured abroad from taxable chemicals may not be. This may place American companies at a disadvantage, both as to sales within the United States and as to sales abroad. There was unanimity among Members that any such anti-competitive impacts should be minimized and, if possible, eliminated.

Superfund Taxes: Background

Since the start of the second quarter of 1981, crude oil, 12 primary petrochemicals [1] and 30 inorganic chemicals have been subject to an environmental excise tax used to support the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. This law is commonly referred to as the "Superfund." Its purpose is to establish a means for the Federal and State govern-

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[1] There are 42 substances subject to the tax, one of which is ammonia. Some persons include ammonia on a list of organic feedstocks and conclude that the list numbers 12. Others include ammonia on the list of inorganic feedstocks and conclude that the lists number 11 and 33 respectively. The law makes no distinction based on the organic or inorganic nature of the chemicals. The substances subject to the tax are as follows:

Acetylene, Benzene, Butane, Butylene, Butadiene, Ethylene, Methane, Naphthalene, Propylene, Toluene, Xylene, Ammonia, Antimony, Antimony trioxide, Arsenic, Arsenic trioxide, Barium sulfide, Bromine, Cadmium, Chlorine, Chromium, Chromite, Potassium dichromate, Sodium dichromate, Cobalt, Cupric sulfate, Cupric oxide, Cuprous oxide, Hydrochloric acid, Hydrogen fluoride, Lead oxide, Mercury, Nickel, Phosphorus, Stannous chloride, Stannic chloride, Zinc chloride, Zinc sulfate, Potassium hydroxide, Sodium hydroxide, Sulfuric acid, Nitric acid.

ments to clean up releases into the environment of hazardous substances, pollutants and contaminants.

Under the Act, receipts from the excise tax and from appropriations cannot exceed $1.6 billion for a five-year period ending September 30, 1985. The tax can raise no more than $1.4 billion.

Role of the Superfund, if any, in industry decline

During the period since the Superfund tax was imposed, the United States industries contributing to the tax have suffered economic declines. Some suggestions hae been made that these declines were a consequence, in whole or part, of the tax. To assist the Committee on Environment and Public Works in determining the effect which the Superfund tax has had in the past and might have in the future (especially if the size of the Fund were substantially increased with continued reliance exclusively on the current taxing mechanism), on the economic vitality of these industries, the Chairman asked the Congressional Research Service of the Library of Congress to examine key trends in United States production of six primary petrochemicals.

The Congressional Research Service report was submitted to the Committee on July 30, 1984 and summarized the conclusions of the researchers as follows:

> In sharp contrast to its rapid growth during the 1960's and 1970's, the U.S. petrochemical industry—especially producers of primary petrochemicals—has been in decline during most of the period since 1979. Production, employment, and operating rates were all notably lower in 1983 than in 1979. At the same time, the share of the U.S. market accounted for by imports has grown prodigiously.
>
> This reversal can be attributed to a number of developments, some domestic in origin, some foreign, and some unrelated to petrochemicals altogether:
>
> —A slow down in market penetration, partly as a result of the general economic recession or problems of specific U.S. industries.
>
> —Higher costs caused by relaxation or price controls on petroleum and natural gas—the basic raw materials from which petrochemicals are derived.
>
> —A marked appreciation of the dollar against foreign currencies.
>
> —Sluggishness in key export markets because of slow economic growth abroad.
>
> —Expansion of petrochemical-producing capability by hydrocarbon-rich foreign countries whose abundant resources confer a cost advantage.
>
> —Rapid growth in U.S. imports of goods derived from petrochemicals or incorporating petrochemical products in large amounts.
>
> —Higher costs caused by imposition of the "Superfund" excise tax, enacted to help pay for cleaning up sites where hazardous substances have been dumped or spilled.

The CRS report is printed in full as Appendix A-1.

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The Chairman also asked that the Congressional Research Service staff interview industry analysts to determine their views of the role which the tax played, if any, in an industry decline. Those views were incorporated in a report submitted to the Chairman on August 20, 1984.

According to the report, one analyst believed that the "Superfund taxes were not a big factor in the downturn of U.S. primary petrochemical production." A second analyst was described as believing that Superfund taxes played "a minor role" in the organic chemical industry downturn. A third analyst was said to believe that Superfund taxes "have had a relatively small impact on the fortunes of the U.S. petrochemical industry." A fourth analyst was reported as believing the tax played a "small role." Two of the analysts, however, were also reported as believing that a sharp increase in the existing tax could have significant competitive consequences for the domestic industry.

This report is reprinted as Appendix A-2.

Impact of a Major Increase in the Existing Feedstock Tax

BACKGROUND

The chemical industry has expressed great concern over the impact that a substantially expanded Superfund program would have if it continues to rely exclusively on the existing crude oil and feedstock taxing mechanism. As a matter of historical interest, the originally introduced Superfund bull (S. 1480 of the 96th Congress) proposed to fund the program through a tax on waste generation, not feedstocks. However, representatives of both the Environmental Protection Agency and the Department of the Treasury opposed such an approach on the grounds that it was administratively unworkable. They testified that the tax before the Committee would require 260,000 different points of collection, with associated paperwork and administrative burdens for industry and government alike.

DISSCUSSION

In 1980, the Committee reported a Superfund bill that included feedstock taxing mechanism similar to existing law. The Committee had originally considered funding the Superfund program through a tax on waste generation, but based on testimony from the Department of the Treasury and the Environmental Protection Agency that such an approach was administratively unworkable, turned instead to the feedstock tax. The feedstock mechanism was said to offer several advantages:

—Because the fee could be passed on through the chain of commerce of hazardous substances, its impact would be more widely spread than a waste-end tax and thus could raise more revenue with little disruptive effect on particular sections of the economy.

—Because it would apply to fewer than 1,000 companies, on 43 basic substances, it would be relatively simple to administer.

—Since virtually all hazardous wastes and substances were found to be derivatives of the 43 taxable, and the feedstock

fee could be passed on, users of products made from hazardous substances would bear the costs of the risks involved.

Several of these expected advantages reflected an underlying premise that the costs of the tax would be passed on to the ultimate consumers of chemicals and chemical products. The Committee heard testimony that this premise has not been realized and that a four-fold or five-fold increase in the existing tax could create substantial competitive disadvantages for United States corporations, both here and abroad. Relatively little objective analysis of the economic impacts of a sharply increased feedstock fee was supplied to the Committee, but one economic analysis was commissioned by the Atlantic Richfield Company (ARCO).

ARCO analysis of propylene

The ARCO analysis chose two specific feedstocks, propylene and benezene for analysis. According to the study, it "shows what happens when a tax of $224.35 per ton is placed on production of propylene and a tariff at the same effective rate is placed on imports." (An analysis by the staff of the Joint Committee on Taxation of the House-passed reauthorization, H.R. 5640, projects the 1990 propylene rate in the bill to be $15.65 per ton. S. 2892 contains no rate recommendations for either propylene or other feedstocks.)

The ARCO analysis indicates that when a tax is imposed on propylene, most of the cost is passed through to manufacturers of polypropylene, a major derivative. Polypropylene produced in the United States is manufactured from propylene subject to the feedstock tax, while polypropylene manufactured outside the United States is not. Thus, according to the ARCO analysis, the feedstock tax has at least two results: first, domestically produced polypropylene "will be relatively more expensive than imports"; and, in foreign markets, "U.S. propylene is more expensive than foreign-produced propylene."

The ARCO analysis summarizes the predicted United States trade effects on polypropylene from a propylene feedstock tax increase in the following chart:

U.S. TRADE EFFECTS ON POLYPROPYLENE FROM A TAX INCREASE ON PROPYLENE

POLYPROPYLENE	PROPYLENE TAX $4.87* (initial)	$24.35**	$48.70**
Price (per ton)	$ 760	$ 766.36	$ 774.31
Supply (000 tons)	1,757	1,356	854
Demand (000 tons)	1,356	1,350	1,342
Net exports (imports) (000 tons)	401	6	(488)
Reduction of exports	—	98%	221%

*Initial prices and quantities from U.S. International Trade Commission.

**Post-tax price and quantity estimates from MAC Petrochemical Trade Model.

The ARCO economic impact analysis is printed in the Report as Appendix B.

Critics of the current taxing mechanism have asserted that ARCO's predictions with respect to polypropylene are representative of what would happen with other feedstocks if rates are sharply increased. Although the Committee has no information analyses with respect to other feedstocks and their derivatives, it is the view of the Members of the Committee on Environment and Public Works that the $7.5 billion level contained in S. 2892, as reported, should not be drawn exclusively from the current crude oil and feedstock taxing mechanism. It was for this reason that information on a variety of other taxing mechanisms was collected. These taxing alternative are explained in more detail in the remainder of the Report.

Alternative Taxing Mechanisms

Those which continue to place the financial burdens on crude oil and chemical feedstocks.

a. An increase in the crude oil tax.—Crude oil is currently taxed at a rate of 0.79 cents per barrel. The tax is imposed at the point of refining or importation. Crude oil is a major source of the chemicals and their wastes which are found at Superfund sites. The crude oil tax contributes approximately 15 percent of the Fund revenues at the present rate.

Some have suggested that the tax on crude be increased. The highest rate contained in information supplied to the Committee on Environment and Public Works was 9.0 cents per barrel, which would raise an estimated $450 million per year, or a five year total of $2.25 billion.

The Committee received no information on the potential economic or other impacts of increasing the tax on crude oil.

b. Expansion of the feedstock list to include substances which are not now taxed, but which are found at Superfund sites.—It has been suggested that the current list of taxable chemicals should be expanded to include feedstocks which are themselves found at Superfund sites or those wastes or derivatives are found at the sites. Based on information supplied informally by the information supplied by the Environmental Protection Agency, suggestions for specific additions to the list were made. However, the Agency information provided to be quite controversial as to the accuracy of the underlying data justifying expansion of the list to include certain specific substances. Such of that information as was supplied to the Committee on Environment and Public Works is contained in Committee files and is available to interested persons.

The House-passed bill, H.R. 5640, expanded the list to taxable substances to add new chemicals. These include the following:

> Coal derived light oils, coal tars, alumimum sulphate, aluminum phosphide, asbestos, copper, lead (as a replacement for lead oxide, which was deleted), lithium carbonate, manganese, phosphoric acid, selenium, uranium oxide, vanadium, zinc, zinc oxide.

c. Changes in the feedstock tax rates based on the frequency with which chemicals made from each feedstock are found at each Super-

fund site.—This approach is one which the Environmental Protection Agency was known to be actively investigating until early 1984. It is often referred to as the "fair share" feedstock tax because it adjusts rates based on the frequency with which a specific chemical or one of its derivatives is encountered at Superfund sites.

Frequency is supposedly a surrogate for danger posed by a feedstock and its derivatives. However, in determining whether they respond to a particular site and in attempting to assess the risk which it poses, the Environmental Protection Agency does not attempt to ascertain the complete list of hazardous substances at any one site. Instead, the Agency tests until it determines that a sufficient number of substances are present to warrant a response under Superfund. Since testing methods for some hazardous substanes may be more well developed or less expensive than tests for others, some substances may be either over-represented or under-represented in a "fair share" approach.

In addition, while the "fair share" approach developed to date takes in account the frequency with which a substance is encountered, it does not weigh substance toxicity. Since the hazard posed by any particular chemical is a function of concentration as well as inherent toxicity, the "fair share" may not fully account for all variables.

The "fair share" approach results in dramatic rate increases for certain substances. To counter this effect it is possible to cap increases. While capping will, by definition, erode the "fairness" of the "fair share" approach as to increases in tax rates, the approach will still retain its validity as to decreases. That is, feedstocks which produce large quantities of substances which are benign would still benefit from rate cuts even though substances whose rates should be increased will be capped.

Capping of "fair share" rates also reduces revenues. The amount of the revenue reduction depends on the placement of the cap, but according to estimates made by the Joint Committee on Taxation, a 3 percent cap results in a roughly 50 percent revenue loss when the rates if originally set to raise $10 billion over a five-year period.

The Chairman asked the Joint Committee to provide comparisons of total revenue raised together with specific feedstock rates under a "fair share", a "fair share" capped at 3 percent, and under H.R. 5640 as approved by the House. The Joint Committee's response, together with Chairman Stafford's request, are reprinted below.

The Chairman also asked that the Joint Committee calculate rates required to raise a 5-year total of $7.5 billion, assuming the addition of no new substances and a continued general revenue share of 13.75 percent, as in current law. The reply to the chairman's request follows:

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON TAXATION,
Washington, DC, September 13, 1984.

Hon. ROBERT T. STAFFORD,
U.S. Senate,
Washington, DC.

DEAR SENATOR STAFFORD: In response to your request, we are providing you with our estimates of the tax rates necessary to support a $7.5 billion re-authorization of the current Superfund financing mechanism for the period October 1, 1985 through September 30, 1990. These estimates assume that 13.75% of the required revenues will accrue from general revenue approporiations, leaving $6,468,750,000 to be raised from the taxes on crude oil and chemical feedstocks. It was further assumed that the present law set of feedstocks and exemptions would be retained, and that all tax rates would be proportional to present law tax rates.

Table 1 provides a comparison of present law tax rates and the rates estimated to be necessary under this proposal. Table 2 presents the estimated revenue effects of this proposal for fiscal years 1986-1991.

Sincerely,

JAMES W. WETZLER.

Enclosures.

TABLE 1.—COMPARISON OF PRESENT LAW AND PROPOSED TAX RATES

Substance	Present law rate	Proposed new rate
Crude oil	0.0079	0.0364
Organic substances:		
Acetylene	4.87	22.43
Benzene	4.87	22.43
Butadiene	4.87	22.43
Butane	4.87	22.43
Butylene	4.87	22.43
Ethylene	4.87	22.43
Methane	3.44	15.84
Napthalene	4.87	22.43
Propylene	4.87	22.43
Toluene	4.87	22.43
Xylene	4.87	22.43
Inorganic substances:		
Ammonia	2.64	12.16
Antimony	4.45	20.49
Antimony trioxide	3.75	17.27
Arsenic	4.45	20.49
Arsenic trioxide	3.41	15.70
Barium sulfide	2.30	10.59
Bromine	4.45	20.49
Cadmium	4.45	20.49
Chlorine	2.70	12.43
Chromite	1.52	7.00
Chromium	4.45	20.49
Cobalt	4.45	20.49
Cupric oxide	3.59	16.53
Cupric sulfate	1.87	8.61
Cuprous oxide	3.97	18.28
Hydrochloric acid	0.29	1.34
Hydrogen fluoride	4.23	19.48

TABLE 1.—COMPARISON OF PRESENT LAW AND PROPOSED TAX RATES—Continued

Substance	Present law rate	Proposed new rate
Lead oxide	4.14	19.06
Mercury	4.45	20.49
Nickel	4.45	20.49
Nitric acid	0.24	1.11
Phosphorus	4.45	20.49
Potassium dichromate	1.69	7.78
Potassium hydroxide	0.22	1.01
Sodium dichromate	1.87	8.61
Sodium hydroxide	0.28	1.29
Stannic chloride	2.12	9.76
Stannous chloride	2.85	13.12
Sulfuric acid	0.26	1.20
Zinc chloride	2.22	10.22
Zinc sulfate	1.90	8.75

TABLE 2.—ESTIMATED REVENUE EFFECTS OF PROPOSED SUPERFUND REAUTHORIZATION PLAN, FISCAL YEARS 1986–91

[Thousands of dollars]

	Fiscal year—					
	1986	1987	1988	1989	1990	1991
Petroleum	185,715.1	196,628.0	195,667.9	195,245.6	194,391.6	10,767.9
Organic chemicals	726,181.9	830,641.7	867,391.1	901,817.3	935,224.0	52,471.4
Inorganic chemicals	198,072.4	226,564.7	236,588.5	245,978.5	255,090.5	14,312.0
Total	1,109,969.5	1,253,834.4	1,299,647.5	1,343,041.4	1,384,706.1	77,551.3

Five-year totals:	
Petroleum	978,416.1
Organic chemicals	4,313,727.3
Inorganic chemicals	1,176,606.6
Grand total	6,468,750.0
Percentage breakdown:	
Petroleum	15.1
Organic chemicals	66.7
Inorganic chemicals	18.2
Grand total	100.0

CONGRESS OF THE UNITED STATES,
JOINT COMMITTEE ON TAXATION,
Washington, DC, September 11, 1984.

Hon. ROBERT T. STAFFORD,
U.S. Senate,
Washington, DC.

DEAR SENATOR STAFFORD: This is in partial response to your letter of September 7, 1984 requesting revenue estimates for various alternative Superfund financing mechanisms. We have not yet completed our study of all the proposals advanced in your letter, but are providing you with our analysis of two proposals that have been developed through consultation with your staff.

Plan A is designed to raise $10.0 billion over a five-year period, subject to a number of constraints. First, the tax rate on crude oil is established at $0.09 per barrel. This produces approximately $2.4 billion over the period 10/1/85 to 9/30/90, leaving a balance of approximately $7.6 billion to be derived from taxes on feedstocks. The tax rates on these feedstocks were derived using a 'fair share' methodology. EPA provided us with a set of 'feedstock scores' for those substances to be included in the tax base. These feedstock scores are a measure of the relative frequency with which each feedstock, or a derivative of that feedstock, has been found in Superfund sites. Each substances 'fair share' of the $7.6 billion to be raised by feedstock taxes was then computed by multiplying the $7.6 billion total target by the ratio of that substance's feedstock score to the sum of all feedstock scores included in the tax base. The tax rates necessary to achieve each substances fair share were then calculated, assuming the existence of a tax credit for exported feedstocks and the continuance of those exemptions from taxation found in present law. Reflecting our understanding of the desires of the Committee on Environment and Public Works, the tax base used in this analysis differed in several ways from that prescribed in H.R. 5640. Relative to H.R. 5640, this tax base added aluminum chloride, but did not tax copper, uranium oxide, zinc, zinc oxide or coal-derived light oils. In performing this analysis, it was assumed that the tax rates would be indexed for inflation each January 1 in a manner consistent with that proposed in H.R. 5640.

Plan B retains the same tax base and methodology utilized in Plan A, with the imposition of one additional constraint. Here, in recognition of the tax rates imposed on some substances under Plan A, each tax rate is further constrained to be no greater than 3 percent of the substance's estimated wholesale price. This resulted in a significant reduction in estimated revenues from the feedstocks, from $7.6 billion to $2.5 billion. Furthermore, the concept of a fair share distribution of the feedstock tax burden is no longer meaningful.

Table 1 provides a summary of the tax rates found to be necessary under Plan A to raise the total $10.0 billion target, the tax rates that would occur under Plan B, and the tax rates reported for H.R. 5640 when no waste-end tax is assumed to be enacted. These tax rates are reported before any inflation adjustment. Table 2 provides a summary by fiscal year and feedstock type of revenues estimated to accrue under Plan A, while Table 3 provides similar information for Plan B.

We will provide you with more information concerning our findings in this area as they become available.

Sincerely,

RICHARD A. GORDON.

Enclosures.

TABLE 1.—SCHEDULES OF TAX RATES FOR ENVIRONMENT AND PUBLIC WORKS PLANS A AND B AND TAX RATES FOR H.R. 5740, AS PASSED BY THE HOUSE OF REPRESENTATIVES, ASSUMING NO WASTE-END TAX ENACTED

Substance	E&PW plan A	E&PW plan B	H.R. 5640 rates for sales during—				
			1985	1986	1987	1988–89	1990
Crude oil	$0.09	$0.09	$0.0786	$0.0786	$0.0965	$0.0965	$0.0965
Organic substances:							
Acetylene	158.30	59.82	29.91	30.00	35.00	35.00	35.00
Benzene	43.26	13.20	6.60	8.80	13.20	15.40	17.60
Butadiene	0.81	0.81	9.79	13.05	19.58	22.84	26.11
Butane	10.02	8.40	4.87	5.60	8.40	9.80	11.20
Butylene	9.42	9.42	5.15	6.87	10.30	12.02	13.73
Coal-derived light oils	NA	NA	50.2	6.69	10.04	11.71	13.39
Coal tars	49.44	3.56	1.78	2.37	3.56	4.15	4.75
Ethylene	3.82	3.82	6.89	9.19	13.78	16.08	18.37
Methane	17.67	4.00	3.44	3.44	4.00	4.67	5.33
Napthalene	321.79	13.78	6.89	9.19	13.78	16.08	19.37
Propylene	4.92	4.92	5.87	7.83	11.74	13.70	15.65
Toluene	22.90	10.38	5.19	6.92	10.38	12.11	13.84
Xylene	12.41	12.41	10.65	14.05	21.30	21.77	20.53
Inorganic substances:							
Aluminum chloride	1.51	1.51	NA	NA	NA	NA	NA
Aluminum phosphide	16.03	16.03	30.00	30.00	35.00	35.00	35.00
Aluminum sulfate	1.56	1.56	3.52	4.69	7.04	8.40	9.35
Ammonia	5.41	5.28	2.64	3.52	5.28	6.16	7.04
Antimony	25.42	25.42	30.00	30.00	35.00	35.00	35.00
Antimony trioxide	24.10	24.10	30.00	30.00	35.00	35.00	35.00
Arsenic	2,999.45	158.85	30.00	30.00	35.00	35.00	35.00
Arsenic trioxide	3,669.25	25.94	12.97	17.29	25.94	30.26	34.59
Asbestos	112.57	11.52	5.76	7.68	11.52	13.44	15.36
Barium sulfide	4,154.12	14.26	7.13	9.51	14.26	16.64	19.01
Bromine	18.50	18.50	9.73	12.97	19.46	22.70	25.94
Cadmium	22,988.33	71.32	30.00	30.00	35.00	35.00	35.00
Chlorine	39.15	6.10	3.05	4.07	6.10	7.12	8.13
Chromite	4.10	1.70	1.52	1.52	1.70	1.98	2.27
Chromium	1,313.66	265.83	30.00	30.00	35.00	35.00	35.00
Cobalt	79.10	79.10	30.00	30.00	35.00	35.00	35.00
Copper	NA	NA	23.60	30.00	35.00	35.00	35.00
Cupric oxide	201.09	78.45	30.00	30.00	35.00	35.00	35.00
Cupric sulfate	205.93	46.36	23.18	30.00	35.00	35.00	35.00
Cuprous oxide	201.86	77.15	30.00	30.00	35.00	35.00	35.00
Hydrochloric acid	5.01	1.88	0.94	1.25	1.88	2.19	2.51
Hydrogen fluoride	15.20	15.20	23.50	30.00	35.00	35.00	35.00
Lead	102.13	16.54	8.27	11.03	16.54	19.30	22.05
Lithium carbonate	11.01	11.01	30.00	30.00	35.00	35.00	35.00
Manganese	468.5	45.39	22.69	30.00	35.00	35.00	35.00
Mercury	64,148.65	316.40	30.00	30.00	35.00	35.00	35.00
Nickel	29.68	29.68	30.00	30.00	35.00	35.00	35.00
Nitric acid	4.35	4.35	3.05	4.07	6.10	7.12	8.13
Phosphoric acid	5.60	5.60	7.65	10.20	15.30	17.85	20.40
Phosphorus	4.64	4.64	6.65	6.65	7.59	7.59	7.59
Potassium dichromate	3961.10	30.06	15.03	20.04	30.06	35.00	35.00
Potassium hydroxide	0.68	0.68	9.83	13.11	19.66	22.94	26.21
Selenium	14,508.51	228.87	30.00	30.00	35.00	35.00	35.00
Sodium dichromate	49.90	36.96	18.48	24.64	35.00	35.00	35.00
Sodium hydroxide	1.61	1.61	2.82	3.76	5.64	6.58	7.52
Stannic chloride	16.10	16.10	30.00	30.00	35.00	35.00	35.00
Stannous chloride	65.09	65.09	30.00	30.00	35.00	35.00	35.00
Sulphuric acid	2.14	1.56	0.78	1.04	1.56	1.82	2.08
Uranium oxide	NA	NA	30.00	30.00	35.00	35.00	35.00
Vanadium	396.18	226.93	30.00	30.00	35.00	35.00	35.00
Zinc	NA	NA	12.48	16.64	24.96	29.12	33.28
Zinc chloride	514.96	21.10	10.55	14.07	21.10	24.62	28.13

TABLE 1.—SCHEDULES OF TAX RATES FOR ENVIRONMENT AND PUBLIC WORKS PLANS A AND B AND TAX RATES FOR H.R. 5740, AS PASSED BY THE HOUSE OF REPRESENTATIVES, ASSUMING NO WASTE-END TAX ENACTED—Continued

Substance	E&PW plan A	E&PW plan B	H.R. 5640 rates for sales during—				
			1985	1986	1987	1988–89	1990
Zinc oxide	NA	NA	14.43	19.24	28.86	33.67	35.00
Zinc sulfate	184.04	16.60	8.30	11.07	16.60	19.37	22.13

TABLE 2.—ESTIMATED REVENUE EFFECT OF ENVIRONMENT AND PUBLIC WORKS PLAN A, FISCAL YEARS 1986–91

[Thousands of dollars]

	Fiscal year—					
	1986	1987	1988	1989	1990	1991
Petroleum	459,460.5	486,459.0	484,083.8	483,039.0	480,206.3	27,359.8
Organic chemicals	450,434.0	538,632.2	592,064.2	643,214.2	693,457.1	40,494.3
Inorganic chemicals	691,401.2	842,584.8	927,244.4	1,008,311.5	1,088,026.0	63,550.9
Total	1,601,295.7	1,867,675.9	2,003,372.4	2,134,564.8	2,261,689.4	131,405.1

Five-year totals:	
Petroleum	2,420,608.5
Organic chemicals	2,958,296.0
Inorganic chemicals	4,621,098.8
Grand total	10,000,003.4
Percentage breakdown:	
Petroleum	24.2
Organic chemicals	29.6
Inorganic chemicals	46.2
Grand total	100.0

TABLE 3.—ESTIMATED REVENUE EFFECT OF ENVIRONMENT AND PUBLIC WORKS PLAN B, FISCAL YEARS 1986–91

[Thousands of dollars]

	Fiscal year—					
	1986	1987	1988	1989	1990	1991
Petroleum	459,460.5	486,459.0	484,083.8	483039.0	480,206.3	27,359.8
Organic chemicals	221,211.1	259,811.3	285,868.4	310,824.9	335,356.4	19,587.3
Inorganic chemicals	162,666.3	195,709.8	215,074.8	233,603.2	251,800.0	14,703.0
Total	843,337.9	941,980.2	985,027.0	1,027,467.1	1,067,362.7	61,650.1

Five-year totals:	
Petroleum	2,420,608.5
Organic chemicals	1,432,659.4
Inorganic chemicals	1,073,557.1
Grand total	4,926,825.0
Percentage breakdown:	
Petroleum	49.1
Organic chemicals	29.1
Inorganic chemicals	21.8

TABLE 3.—ESTIMATED REVENUE EFFECT OF ENVIRONMENT AND PUBLIC WORKS PLAN B, FISCAL YEARS 1986-91—Continued

[Thousands of dollars]

	Fiscal year—					
	1986	1987	1988	1989	1990	1991
Grand total						100.0

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC, September 7, 1984.

Mr. DAVID H. BROCKWAY,
Chief of Staff, Joint Committee on Taxation,
U.S. Senate, Washington, DC.

DEAR MR. BROCKWAY: The Senate is currently considering expansion and extension of the Comprehensive Environmental Response, Compensation, and Liability Act, more commonly referred to as the Superfund law. Legislation is now pending before the Committee on Environment and Public Works and a hearing has been scheduled for September 19, 1984, by the Committee on Finance.

In connection with Senate consideration of the Superfund legislation, I would appreciate information and assistance from the staff of the Joint Committee on Taxation. Members of the staff of the Committee on Environment and Public Works have met informally with members of the Joint Committee staff (including Randy Weiss and Peter Merrill). In addition, the staff of the Environmental Protection Agency has provided a background paper dated August 31, 1984, suggesting possible modifications of the feedstock tax. So that we might be prepared to evaluate the impact of various revenue proposals discussed in that paper and other documents, I would appreciate your staff preparing revenue estimates.

Specifically, I would appreciate knowing what tax rates would be required to implement the relative sharing of tax burdens suggested by the background paper based on revenue needs of $5 billion and $7.5 billion, respectively, over a five year period. The estimate should provide for a limit on each rate of 3 percent of sales price and $30 per ton. Please include in this estimate a petroleum excise tax of 9 cents per barrel.

In connection with the feedstock chemical tax, I would also appreciate an examination of the possibility of substituting a tax on first and second derivative substances in lieu of the tax on primary petrochemicals. Such a list has been or will be provided to your staff by the staff of Senator Bentsen. Based on this information, I would appreciate knowing what rates would have to be applied to achieve the same revenue flow as under the possible amendment described above. In addition, I would appreciate a comparable analysis of the rates contained in H.R. 5640 as approved by the House of Representatives, modified to locate the tax on derivatives rather than feedstocks.

Finally, there is considerable interest among Members in enacting a so-called "waste end" tax. In this connection, I would appreciate receiving whatever revenue estimate may have been compiled

by the Joint Committee staff in connection with such proposals advanced to date. Senators Moynihan, Hart, and Baucus are particularly interested in this subject, so their staffs may well communicate directly with you.

Thank you in advance for your assistance and cooperation.

Sincerely yours,

ROBERT T. STAFFORD,
Chairman.

An explanation of the "fair share" feedstock is printed in Appendix C.

d. Shifting the tax on certain feedstocks (e.g., ethylene and propylene) to primary and secondary derivatives.—Some persons have complained that the current feedstock taxing mechanism is inequitable based on their contention that some derivatives which are themselves benign and which generate little or no hazardous wastes bear an unfairly large share of the cost. Two feedstocks frequently mentioned in this regard are ethylene and propylene, which are sources respectively of the derivatives polyethylene and polypropylene. Each of these derivatives is said to be itself benign and to produce little or no hazardous wastes, even though it is said to be a major source of the tax on its feedstock. Polyethylene, for example, (which is used to manufacture plastic bags, liners for hazardous waste disposal sites, etc.) is said to bear roughly one-half of the fee imposed on the feedstock ethylene. Similar assertions are made with regard to polypropylene (used for clear plastic film) and its feedstock, propylene.

Current law reflects some shifts in the points of taxation made in response to similar arguments when Superfund was enacted in 1980. For example, instead of taxing copper, the Congress chose to impose the tax on three toxic copper compounds. And, as suggestions have been made to expand the list of taxable feedstocks (e.g., to include aluminum), some have reacted by proposing that the tax be placed on compounds of such metals rather than the metals themselves. These suggestions to tax compounds should be distinguished from suggestions to tax derivatives. Compounds may or may not be made from the feedstock in question. For example, although aluminum sulphate is a compound of aluminum, it is not a derivative. Thus, shifting the tax from aluminum to aluminum sulphate would not be merely shifting the tax further down the product stream (which would be the case, for example, if part of the tax on ethylene were shifted to one of its product derivatives such as vinyl chloride). Instead, shifting the tax to aluminum sulphate in lieu of aluminum would remove aluminum and its product stream from the tax system entirely.

Considerable attention has been given the possibility of shifting taxes to derivatives of the organic feedstocks. The taxed feedstocks and their major derivatives are listed in the following chart, the source of which is the ARCO study described earlier in the Report (see the earlier discussion of economic impact of the feedstock tax).

PRIMARY PETROCHEMICALS, MAJOR DERIVATIVES, AND MAJOR USES

Primary petrochemicals	Major derivatives	Major uses
Acetylene		
Benzene	Ethylbenzene	Styrene plastics
	Cumene	Phenolic polymers
	Cyclohexane	Nylon
	Aniline	
	Maleic anhydride	
Butadiene	Styrene butadiene rubber	Rubber products
	Polybutadiene rubber	Fibers
	Nylon	
	Polychloroprene	
	Styrene butadiene latex	
Butane:		
Normal butane	Maleic anhydride	
	Butadine	
	Acetic acid	
ISO butane	Propylene oxide	
	T-Butanol	
Butylene	Butadiene	
	Sec-Butanol	
Ethylene	Polyethene	Fabricated plastics
	Ethylene oxide	Antifreeze
	Vinyle chloride	Fibers
	Ethylbenzene	Solvents
	Acetyldehyde	
	Ethanol	
Methane	Ammonia	
	Methanol	
	Phosgene	
Napthalene	Phthalic anhydride	
Propylene	Polypropylene	Fabricated plastics
	Acrylonitrile	Fibers
	Cumene	
	Acrylic acid	
	Allyl chloride	
	2-Ethylhexanol	
	Isopropyl alcohol	
	N-Butanol	
Toluene	Dinitro tolune	
Xylenes:		
Metaxylene		Polyester fibers
Orthoxylene		Film
Paraxylene		Fabricated plastics

In an attempt to determine the validity of assertions that certain derivatives were benign and did not generate wastes requiring response under Superfund, the Environmental Protection Agency was asked to provide information on eleven specific compounds. These compounds were:

> Vinyl acetate monomer, ethylene propylene rubber, propylene oxide, alkylbenzene, nitrobenzene, maleic anhydride, styrene butadiene rubber, polybutadiene, nitrile rubber, neoprene rubber, styrene butadiene latexes.

The EPA response is printed as Appendix D. In summary, however, the Agency concluded that some of these compounds were found either not at all or at a very small number of those sites ranked by the Hazard Ranking System. As the analysis states, however, the information it contains should be evaluated with care because, due to the short time frame, no attempt was made to de-

termine whether precursos of the compounds are found at Superfund sites.

While it is at least theoretically possible to identify substances which do not contribute to Superfund sites and thus should perhaps not be taxed, identifying these chemicals and calculating the appropriate rates, if any, may create other problems which are substantial. The industries and companies which were most critical of the feedstock tax and supportive of a shift toward derivatives taxation were asked repeatedly to provide information on what derivatives could be taxed as substitutes and at what rates. This information was never supplied to the Committee. Thus, it is not possible to objectively assess either the revenue potential of a derivatives tax or the potential industry dislocations which it could cause. The major exception to industry failure to supply information is the Management Analysis Center, Inc. report prepared for the Atlantic Richfield Corporation and repringed here as Appendix B. The ARCO analysis attempts to examine the consequences of shifting the propylene tax to one derivative, phenol, while raising the same amount of revenue. The results of the phenol-for-propylene substitution analysis are described in the report as follows:

> Increasing the propylene tax reduces the production of propylene by about the same percentage as a phenol tax that raises the same revenue. But there is a dramatic difference in the effects on downstream products:
>
> —The phenol tax reduces the production of the hazardous substance phenol between 12 percent and 50 percent, while the propylene tax reduces phenol only between 0.5 percent and 3 percent.
>
> The propylene tax reduces the production of the nonhazardous derivative polypropylene between 2 percent and 11 percent, while the phenol tax actually raises production between 1 percent and 6 percent.
>
> The phenol tax raises the production of polypropylene because it reduces the demand for the propylene input, reducing its price. Since propylene is the principal input into the production of polypropylene, this encourages increased output of polypropylene. This illustrates that by taxing the hazardous substance we not only reduce its use but also encourage use of nonhazardous substances. This effect does not occur with feedstock taxes.
>
> The phenol tax is markedly more effective as an externality tax than the propylene tax. For the same revenue raised, it has fifteen to thirty-five times greater success reducing production of hazardous products. The effects of the petrochemical feedstock taxes are too scattered, distorting the choices among nonhazardous products, while failing to make a significant dent in the production of hazardous materials.

A comparison of taxing alternatives at different rates was described in the ARCO report by the following chart:

RESULTS OF THE TAX INCIDENCE MODEL

	No tax increase	H.R. 5640 propylene tax	Equivalent phenol tax	Five times current propylene tax	Equivalent phenol tax	Ten times current propylene tax	Maximum revenue phenol tax
	($4.87)	($13.82)	($59.00)	($24.35)	($172.00)	($48.70)	($243.00)
Propylene:							
Production	5,800	5,700	5,700	5,500	5,500	5,200	5,400
Percent change		−2	−2	−4	−5	−9	−7
Polypropylene:							
Production	1,600	1,500	1,600	1,500	1,600	1,400	1,700
Percent change		−2	+1	−5	+4	−11	+6
Cumene:							
Production	1,200	1,200	1,100	1,200	800	1,200	600
Percent change		−0.5	−12	−1	−35	−3	−50
Phenol:							
Production	1,000	1,000	900	1,000	600	900	500
Percent change		−0.5	−12	−1	−35	−3	−50
Tax revenue	$31	$86	$86	$150	$150	$280	$160

Note.—Quantities are in thousands of metric tons, tax rates are in dollars/English ton, and revenues are in millions of dollars/year. Results are expressed to two significant digits.

e. Taxing alternatives which would continue to tax responsible parties, but change the taxing method.—As observed earlier, the feedstock tax was adopted in 1980 in part because of general belief that it would be passed on to the consumers of chemicals. It was also adopted, however, because the Congress was unable to develop alternatives which some found more attractive from a policy perspective. One such alternative was a so-called "waste end" tax.

Some persons find the "waste end" attractive as a means of raising revenue. Others find it attractive as a tax policy which could have the effect of discouraging waste generation, or encouraging safer waste storage, treatment or disposal. To some extent, these are competing interests because as a waste end tax succeeds in reducing waste generation (or shifting it to means of disposal, treatment or generation which are considered preferable by the congress), revenue decreases. Thus one key question is not only what wastes and methods of disposal, treatment or storage are to be taxed, but at what rates.

Although the Committee on Environment and Public Works recommended adoption of the current feedstock taxing mechanism when Superfund was enacted in 1980, some believe that enough progress has been made since then to allow development of a waste end tax. Regulatory programs, especially that of the Resource Conservation and Recovery Act, have matured to the point that they may provide workable points of taxation and taxable events. In addition, a large number of industries and individual companies have intensively examined the waste end tax. Finally, a number of States have adopted waste end taxes and their experience might be helpful in designing a Federal program.

A summary of State waste end taxes is printed as Appendix E.

Definition of "waste".—Typically persons using the term "waste" are referring to materials classified as wastes under the Solid Waste Disposal Act (sometimes referred to as the Resource Conservation and Recovery Act). Persons referring to "hazardous waste" usually have in mind those wastes which are defined as hazardous

under and regulated by subtitle C of the Solid Waste Disposal Act. However, neither "wastes" or "hazardous wastes" as defined under the Solid Waste Disposal Act constitute the universe of pollutants which are discarded and enter the environment. Other methods of pollution disposal occur and are regulated under other environmental laws, including the Clean Water Act; the Safe Drinking Water Act; the Marine Protection, Research and Sanctuaries Act; and, the Clean Air Act.

In some cases, virtually identical materials may be generated by virtually identical manufacturing processes, but discarded in different manners. For example, a company located on a major river may choose to discharge the material pursuant to the Clean Water Act. Another located in an area where extensive oil and gas drilling has occurred or where the geology is particularly suitable, may choose to inject the waste undeground pursuant to the Safe Drinking Water Act. Yet another company may discharge the waste to surface impoundments and be regulated under the Solid Waste Disposal Act. Finally, yet another firm may choose to treat or otherwise handle the pollution in some fashion (e.g., recycle it or discharge into a local sewage treatment plant) in a way that avoids the direct regulatory programs of each of these Federal environmental laws. This, a tax imposed on waste disposed under environmental law can have the effect of shifting disposal into another medium and, hence, another law.

Therefore, an important preliminary question in the design of any "waste end" tax is how "waste" is to be defined. The definition can have important implications for both the administrability of the taxing system and the revenues which it will raise.

The Committee received information on one specific "waste end" tax, which proposed taxation of three different waste streams: (1) those disposed of under the Solid Waste Disposal Act; (2) those disposed of pursuant to the Safe Drinking Water Act through underground injection; and, (3) those from specific waste streams (e.g., the manufacture of a substance for which there is substantial evidence that it causes cancer), even though the waste is not now subject to the regulatory program of the Solid Waste Disposal Act. This proposal is described in more detail in Appendix F-1.

According to information submitted to the Committee, such a waste end tax would raise between $316 million and $2,960 billion per year. The wide range is due to two factors, according to the analysis. First, although the analysis is based on a national survey of hazardous waste facilities, there was still considerable uncertainty as to how much hazardous waste is actually generated and managed in the United States. Second, several States with waste end taxes experienced considerable revenue shortfalls, possibly due to shrinkage of the tax base. Since the tax rates contained in the proposal were established at a level believed adequate to cause shifts in behavior, there was uncertainty as to whether the tax base would shrink and, if so, how much.

The lower bound should reflect a conservative estimate of the annual revenues which would be raised by the proposal, since it assumed, first, that the tax base was less than that indicated the the national survey and, second, that the base would shrink by 90 percent due to the tax and the regulatory programs. Based on these

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assumptions, the analysis indicated that the proposal would raise $316 million per year.

The analysis of the proposal is printed as Appendix F-2.

Information was also provided to the Committee on a proposal to tax all releases to the environment, without regard to the environmental law which regulates them. However, the analysis provided to the Committee did not provide information on the revenue-raising potential of this option because of "the magnitude of the task and the uncertainties in data availability." Both the suggested tax and the analysis are reprinted as Appendix F-3.

In addition to taxing hazardous waste, it was suggested by some persons that the taxation of solid waste disposal be considered. The principal proponent of this approach was Allied Chemical, which suggested that a nationwide disposal fee of $3 per ton be considered. An analysis of this proposal concluded that such a tax on the land disposal of residential, commercial, and certain industrial trash would raise $540 million per year nationwide. Such a tax would be in addition to the estimated average fee of $10.80 per ton already imposed.

This tax is often referred to as a "tipping" fee because it is imposed on trash haulers who pay it at the time their truck beds are hydraulically lifted or "tipped" to dump the trash.

The analysis of the tipping fee is reprinted as Appendix G.

f. Imposition of a tax on the manufacture of certain toxic chemicals based on the frequency with which they are found at Superfund response sites.—There are many toxic substances which are frequently encountered at Superfund response sites. For example, trichlorethylene, a chemical which is widely used as a degreasing agent and which is a demonstrated animal carcinogen, is found at roughly one-quarter of the sites. Some persons have suggested that one way to raise money is to tax these toxic substances, varying the rates according to the frequency with which they are encountered. As with the "fair share" feedstock approach, substantial adverse economic impacts can be limited through the imposition of a cap on resulting price increases. Its impact can also be controlled by exempting from taxation those feedstocks or derivatives which already contribute to the Fund.

An analysis of the revenue raising potential of the "toxics taxes" was provided to the Committee. It was estimated that if a tax of one percent of first-sale price were added to chemicals for each two percent of the Superfund sites at which they were found, It would raise $324 million per year. The revenue raised decreases if the tax rate is dropped or if the frequency rate is changed. Thus, a tax of one-half of one percent for each ten per of occurrence at Superfund sites would raise an estimated $18 million per year.

The revenue analysis of this taxing mechanism is printed as Appendix H.

g. Taxation of the transportation of hazardous substances.—Another of the tax options on which the Committee received information was a possible tax on the transportation of hazardous materials. As analyzed, the option would have imposed a tax of $10 for each "movement" of a hazardous material.

Hazardous "materials" are defined under the Hazardous Materials Transportation Act and its regulations. It is a broad class of

materials, including those which the Secretary of Transportation finds to pose unreasonable threats to health and safety or property in commerce. A subset of "hazardous materials would include "hazardous substances" as they are defined in the Superfund law. (Although CERCLA requires the Secretary of Transportation to expand the list of DOT-regulated hazardous materials to include Superfund hazardous substances, such regulations have not been issued.) Thus, it is possible to structure a tax which is still based on transportation as the taxable event, but with a smaller universe of taxable chemicals; that is, hazardous substances vice hazardous materials.

"Movement" is also a term defined in the Hazardous Materials Transportation Act. However, since that law does not cover all forms of hazardous materials transportation (for example, movement by pipeline is regulated under the Pipeline Safety Act, not the Hazardous Materials Transportation Act.) Therefore, tax predicated only on a "movement" as the taxable event would not necessarily impose a revenue burden on non-HMTA shipments. This could result in inter-modal shifts (e.g., to shipment by barge vice truck, etc.). Finally, a "movement" does not discriminate between shipments according to size. Shipment of a ten pound package by air can be a movement, as can a 10 ton shipment by rail.

It has been suggested that the advantage of a transportation tax is that it could raise a relatively large amount of money in a fashion that would allow the increased costs to be passed down the chain of commerce more easily. Criticisms are that it can result in multiple taxation and inter-modal shifts and, depending on its structure, taxation of goods and activities which are unrelated to Superfund.

As analysis of the transportation tax estimated that annual revenue could range from $700 million to $1.8 billion, with revenues probably closer to the higher figure. The analysis cautioned that the estimate should be treated as a "general approximation of the potential order of magnitude of revenue" rather than an estimate based on data in which there was a high degree of confidence.

The analysis of the transportation tax is printed as Appendix I.

h. Expansion of the tax base to include broad industrial segments which consume, transport, manufacture or dispose of hazardous chemicals.—Under current law, roughly one-eighth of the Superfund is derived from general revenues, with the remainder raised through taxes on crude oil and chemical feedstocks. Some have suggested that since society as a whole, but especially the industrial segment of our economy, have contributed to the release of toxic chemicals, the tax base should be broadened. Specific options for broadening the tax include increasing the general revenue share; enactment of a receipts tax; and, enactment of a corporate surcharge. The latter two options could be modified so that their taxes were imposed only on specific sectors of the economy such as manufacturing, mining, etc. This would bring such a tax closer to the principle of the 1980 law, namely that the tax should be located as closely as possible to those who caused the problem.

The difference between the net receipts tax and the corporate income tax surcharge is that the first would tax businesses on the

basis of business volume while the other would tax on the basis of profitability.

Because each of the three options is so broadly based, the amount of revenue which any one of them could raise without significant tax rate increases greatly exceeds any current or predicted demands on the Superfund. Therefore, an analysis of the revenue-raising potential was inappropriate. The Committee did receive, however, information on the net receipts tax. A corporate income tax surcharge did not surface as a revenue option until a few days before the conclusion of Committee consideration of S. 2892. Therefore, no information was collected on this option. Finally, no information was collected on the specific suggestion that the share of general revenues be raised from the level contained in current law.

The information submitted on the gross receipts tax is printed as Appendix J.

i. Tax options which would help correct the anti-competitive impacts of a tax system.—Under the current law, chemicals mined or manufactured in the United States are subject to the tax, as are those imported. However, derivatives and other products manufactured abroad from these taxable chemicals may not be subject to the tax. There was unanimity among the Members of the committee on Environment and Public Works that anti-competitive impacts should be minimized and, if possible, eliminated.

Some of the options discussed earlier have been suggested because, from the perspective of their proponents, they would lessen the anti-compeitive impacts of the current taxing system. For example, shifting the tax from a feedstock to some or all of its derivatives (and continuing the requirement in existing law that imported products pay a tariff) would eliminate or at least reduce the advantage, if any, which imported derivatives now enjoy. Also, by shifting the tax to other areas (e.g., waste end), anti-competitive impacts of the feedstock fee, if any, are reduced by virtue of the fact that the tax is lower.

Some persons were interested in seeking specific solutions to the asserted anti-competitive problems, however, and were not content with relying on shifting to major taxing alternatives as a means of responding to these complaints. Therefore, the Committee collected information on two different proposals. One proposal was the tax on imported substances contained in the H.R. 5640. The second proposal was to modify the H.R. 5640 proposal so that only substances imported into the United States in large quantities (in excess of 50,000 tons per year) or valued at $1 million or more were taxed.

The analyses of these two options estimated that the first would raise maximum annual revenues of $55 million, while the second would raise a maximum of $13.5 million per year.

These analyses are printed as Appendices K–1 and K–2 respectively.

Conclusion

Substantial revenues for support of the Superfund could be raised through adoption of one or more of the various options. The range of revenues can be summarized as follows:

Revenue potential per year

Option	*Millions*
Crude oil tax	
0.79¢/bbl (current law)	$38
7.8¢/bbl (H.R. 5640)	$393
9.0¢/bbl	$450
Feedstock	
Current law	$210
Expanded (H.R. 5640)	$1,515
Fair Share[1]	As necessary ($1,500)
Fair Share capped [2]	As necessary ($500)
Waste end	
Hazardous wastes	$316-$2,960
Hazardous releases	Unknown
Tipping	$540
Toxics tax	$324
Broadened base	
Transportation	$700-$1,800
Net receipts	As necessary
Corporate surcharge	As necessary
Import-exports	$13.5-$55
Total available, not including "as necessary" items or crude oil	$1,893-$5,679

[1] The revenue rates calculated by the Joint Committee on Taxation for this option were established to raise $10 billion over five years, of which roughly one fourth was from crude oil. Therefore, the share from only feedstocks is $1.5 billion per year.

[2] When the rates necessary to raise $10 billion over five years were capped to preclude increases of more than 3 percent, the system raised $5 billion, of which roughly one-half was derived from crude oil. Therefore, the share from only feedstocks is $500 million per year.

Animal Feed Exemption

SUMMARY

Title II of the reported bill contains a provision extending the tax exemption contained in current law for nitric acid, sulfuric acid, ammonia, and methane used to produce ammonia, when used to produce or manufacture fertilizer, to those same compounds when used as a nutrient in animal feed.

DISCUSSION

Under current law, the animal feed industry expects to pay a little more than $1 million into the Fund in fiscal year 1985. In the event phosphoric acid were added to the list of chemical feedstocks contained in Title II of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (as in H.R. 5640), the cost to the animal feed industry would increase sevenfold, however, thereby sharply increasing the financial burden for livestock and poultry farmers.

The situation posed by the manufacture of animal feed is very similar to that for fertilizer. While the amount of revenue foregone as a result of extending to animal feed manufacturers the same exemption currently accorded the fertilizer industry is minimal, taxation of these compounds when used to supplement animal feed constitutes a burden on both the animal feed industry and the American agricultural sector which appears to be unnecessary.

APPENDIX A-1

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U.S. PRIMARY PETROCHEMICALS: THE SUPERFUND TAXES AND OTHER FACTORS SHAPING RECENT TRENDS IN SUPPLY AND DEMAND

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Economics Division
July 30, 1984

ABSTRACT

This report analyzes key trends since 1979 in U.S. production and use of six of the primary petrochemicals that are subject to Superfund taxes. It also identifies and discusses the chief factors underlying these trends.

U.S. PRIMARY PETROCHEMICALS: THE SUPERFUND TAXES AND OTHER FACTORS SHAPING RECENT TRENDS IN SUPPLY AND DEMAND

I. INTRODUCTION

Primary petrochemicals are essential building blocks of many of the products used by advanced industrial economies. They constitute the raw materials from which plastics, synthetic fibers, synthetic rubber, most fertilizers and pesticides, numerous drugs, and many other products are made. In 1982, U.S. production of primary petrochemicals totalled 93.4 billion pounds.

Since 1981, twelve primary petrochemicals have been taxed to raise revenues for the Superfund. The fund is to be used for cleaning up hazardous waste sites and spills. Current Superfund taxes are due to expire at the end of fiscal year 1985.

This report discusses key trends since 1979 in U.S. production and use of six of the primary petrochemicals on which Superfund taxes are levied. One of the aims is to assess the impact of the taxes on the U.S. petrochemical industry so far.

A. Summary of Findings

In sharp contrast to its rapid growth during the 1960s and 1970s, the U.S. petrochemical industry -- especially producers of primary petrochemicals -- has been in decline during most of the period since 1979. Production, employment, and operating rates were all notably lower in 1983 than in 1979. At the same time, the share of the U.S. market accounted for by imports has grown prodigiously.

This reversal can be attributed to a number of developments, some domestic in origin, some foreign, and some unrelated to petrochemicals altogether:

* A slowdown in market penetration, partly as a result of limits on potential substitution of products derived from petrochemicals for other materials.

* Weakness in several key domestic end-use markets as a result of the general economic recession or problems of specific U.S. industries.

* Higher costs caused by relaxation of price controls on petroleum and natural gas — the basic raw materials from which petrochemicals are derived.

* A marked appreciation of the dollar against foreign currencies.

* Sluggishness in key export markets because of slow economic growth abroad.

* Expansion of petrochemical-producing capability by hydrocarbon-rich foreign countries whose abundant resources confer a cost advantage.

* Rapid growth in U.S. imports of goods derived from petrochemicals or incorporating petrochemical products in large amounts.

* Higher costs caused by imposition of the "Superfund" excise tax, enacted to help pay for cleaning up sites where hazardous substances have been dumped or spilled.

B. Primary Petrochemicals: What They Are and How They Are Used

As their name implies, petrochemicals are derived from petroleum and natural gas, in the form of petroleum liquids, natural gas liquids, and gases. Four chemicals that are identical in structure to four primary petrochemicals (benzene, naphthalene, toluene, and xylene) are derived from coal tar and tar crudes, but in relatively small quantities. In 1982, "true" petrochemicals accounted for 99 percent of U.S. output of primary petrochemicals plus their coal-derived counterparts.

Primary petrochemicals -- the initial direct chemical derivatives of those hydrocarbons — are further processed into intermediate petrochemicals; these, in turn, are processed into petrochemical products, which are sold to a wide

range of industries for further processing and incorporation into products for industrial commercial, or household use. Industry, agriculture, and commerce utilize petroleum-derived items such as surfactants, pesticides, and detergents. Ultimately, primary petrochemicals are used, directly and indirectly, in the production of a large number of durable and nondurable consumer goods ranging from food, beverage containers, and cosmetics to automobiles, home appliances, and furniture.

Thus, the demand for primary petrochemicals is derived from the demand for final chemical products, which is derived from the demand for any end-use products in which the chemicals are incorporated.

C. The Superfund Tax

Since the start of the second quarter of 1981, 12 primary petrochemicals -- broadly defined -- produced or sold in the United States have been subject to an environmental excise tax known as the "Superfund Tax". 1/ The only major primary petrochemicals not taxed are carbon black and methanol.

The tax was set up under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, which empowers the Federal Government to arrange for the clean-up of hazardous waste sites and spills of hazardous substances. 2/ Taxes are levied on crude oil, the 12 primary petrochemicals,

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1/ The twelve petrochemicals are acetylene, ammonia, benzene, butane, butylene, butadiene, ethylene, methane, naphthalene, propylene, toluene, and xylene. Some experts regard butane and methane as hydrocarbon feedstocks rather than primary petrochemicals. All but ammonia and methane are taxed at the rate of $4.87 per ton. Ammonia is taxed at $2.64 per ton and methane at $3.44 per ton. The taxes apply to the quantity of these chemicals sold or used by producers and importers.

2/ For a detailed description of the current Superfund law, the reasons why it was enacted, and the debate over the need to extend and modify it, see: U.S. Library of Congress. Congressional Research Service. Superfund: Hazardous Waste Cleanup. Issue Brief No. IB83064, by Mark E. Anthony Reisch, May 24, 1984 (continually updated). Washington, D.C., 1984.

and 30 inorganic chemicals as they are used or sold by producers and importers. Revenues from the tax go into a fund -- the so-called Superfund -- that is to be used by the Federal Government to direct the clean-up of such sites and spills and to help pay for the costs incurred in doing so. Under the Act, receipts from the excise tax and from appropriations can total no more than $1.6 billion between 1981 and 1985. The tax can raise no more than $1.4 billion (or 87.5 percent of the maximum amount). The remaining $0.2 billion (or 12.5 percent) is to be appropriated by Congress.

Unless Congress and the President move to extend the Act, the tax-collecting authority will expire at the end of fiscal 1985. Various committees in the House and Senate during the 98th Congress have been considering bills to extend and modify it. Some call for a five-year extension, coupled with a vast increase in the size of the Superfund to be financed by much higher taxes on all the petrochemicals covered by the present law. One reauthorization bill, H.R. 5640, would create a fund of $9.0 billion over five years and would raise revenues for it by increasing current Superfund tax rates for primary petrochemicals by from 300 to 600 percent. 3/

The U.S. chemical industry opposes the current tax for two reasons. First, it claims that current Superfund taxes have harmed the competitiveness of domestic chemical producers in U.S. and key foreign markets by imposing on them a cost not borne by their foreign competitors. Imports of the primary petrochemicals that are subject to the taxes are taxed when they are used or sold, but imports of intermediate and final petrochemicals made from them are not subject to the taxes. This exclusion, in the view of many U.S. chemical

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3/ Bureau of National Affairs. BNA's Daily Reporter System: Taxation and Accounting. Washington, D.C. May 31, 1984. p. G-1.

industry executives, gives foreign sellers in the U.S. market of these downstream petrochemical products a competitive advantage over their domestic counterparts, who must include the taxes in their selling prices if they are to keep the profit margins on their petrochemical operations intact.

The second reason why the U.S. chemical industry opposes the current Superfund taxes concerns their equity. The industry argues that the taxes are unfair on the grounds that it bears the brunt of the tax even though many other industries create or contribute to hazardous waste sites. One industry spokesman claims that the electronics, automobile, aircraft, and steel industries should also be taxed for they create and dispose of hazardous wastes. 4/

While acknowledging the need for a national fund to pay for the cost of cleaning up hazardous waste sites and spills, the industry is alarmed by some of the reauthorization bills now being considered. The industry seems to favor a broadening of the scope and a change in the focus of the taxes.

D. Purpose and Scope of the Report

This report discusses key trends in U.S. production and use of primary petrochemicals since 1979, and identifies and analyzes the chief factors shaping these trends. It does not attempt to evaluate the U.S. chemical industry's grievances against current Superfund taxes.

The report focuses on six of the twelve primary petrochemicals that are subject to Superfund taxes: benzene, toluene, xylene, ethylene, propylene, and butadiene. They accounted for 62 percent of U.S. primary petrochemical

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4/ E.C. Holmer. Beware the Folly of Excessive Funding. New York Times. Sunday, June 24, 1984. p. 2F.

production in 1981 and 1982 5/, and are the basic chemicals from which a great many finished petrochemical products are derived. 6/

To shed light on the impact of Superfund taxes, which took effect in in early 1981, the analysis begins in 1979. This was also the peak year for U.S. production of primary petrochemicals.

II. TRENDS SINCE 1979

A. Background

During the two decades before 1979, production of petrochemicals by U.S. producers rose rapidly, as the ultimate products derived from petrochemicals replaced natural materials such as cotton, wood, rubber, metals, soap, manure, and natural solvents. The economic competitiveness of petrochemicals was enhanced by rapid technological advances in production processes and by stable prices of feedstocks and fuel. 7/ Production by the Industrial Organic Chemicals Industry -- the industry that produces all primary and most intermediate petrochemicals 8/ -- increased at average annual rate of 10 percent between 1954 and 1967, and 7 percent between 1967 and 1979.

5/ U.S. Department of Commerce, Bureau of Industrial Economics. U.S. Industrial Outlook: 1984. Washington, January 1984. p. 9-5

6/ Of the 100 biggest selling organic chemicals in the United States, 74 percent are produced from 5 of these 6 primary petrochemicals. See: T.K. Ng, R.M. Busche, C.C. McDonald, and R.W.F. Hardy. Production of Feedstock Chemicals. Science. v. 219, February 11, 1983. p. 735.

7/ See the discussion of the industrial organic industry by Loenard Nakamura (p. 231-256) in Energy Consumption in Manufacturing. by John G. Myers, et. al. Cambridge, Mass: Ballinger Publishing Company. 1974.

8/ This industry actually is designated Industrial Organic Chemicals, not elsewhere classified.

B. Output and Employment

Since 1979, however, U.S. output of primary petrochemicals has been highly cyclical, as demand for what has become commodity chemicals is very sensitive to fluctuations in demand for final chemical products. Production by the Industrial Organic Chemicals industry dropped 0.1 percent in 1980, rose 1.6 percent in 1981, fell 18.5 percent in 1982, and rebounded 14.5 percent in 1983. Production of the six products we have chosen to focus on followed a similar, but more exaggerated path. (See table 1.)

Clearly, the recession of 1981-82 hit this segment of the U.S. chemical industry harder than all the other segments combined. Production by the overall chemicals and allied products group in 1982 was 7 percent below 1979, while production of the six primary petrochemicals was 23 percent below 1979.

TABLE 1. U.S. Output of Chemicals and Allied Products and of Petrochemicals, 1979 to 1983

Product Group	1979	1980	1981	1982	1983
Chemicals & Allied Products:					
Production index 1/	210.5	207.1	215.6	196.1	215.5
Basic Organic Chemicals:					
Production index 1/	233.3	233.0	236.7	192.9	220.9
Six Primary Petrochemicals: (billions of pounds)					
Benzene	11.8	14.3	9.6	7.7	9.4
Butadiene -- 1,3 grades for rubber only	3.6	2.8	3.0	1.9	2.3
Ethylene	29.9	28.7	29.4	24.5	28.6
Propylene	14.2	13.7	13.5	12.5	14.0
Toluene	7.2	7.3	6.1	5.1	7.1
Xylene	7.4	6.9	6.7	5.0	5.9
Total:	74.1	73.7	68.3	56.7	67.3

1/ 1967 = 100.

Sources: U.S. Department of Commerce, Bureau of the Census; Board of Governors of the Federal Reserve System; U.S. International Trade Commission.

The rate at which U.S. chemical companies utilized their production capacity fell steadily from 1979 through 1982 and then rebounded modestly in 1983. (See table 2.) Data on capacity utilization for primary petrochemicals are not readily available. However, there is sketchy evidence that this rate has moved in step with the chemical industry as a whole since 1979. Virtually all this capacity is owned and operated by companies in the petroleum refining and industrial organic chemicals industries. Capacity utilization in U.S. petroleum refining fell in 1980, 1981, and 1982 and then recovered somewhat in 1983; its average in 1983 was 16 percent lower than in 1979. Producers of

TABLE 2. Operating Rates 1/ for U.S. Producers of Chemicals and Allied Products and of Primary Petrochemicals 2/, 1979 to 1983 (percent)

Industry	1979	1980	1981	1982	1983
Chemicals and Allied Products	83	78	75	69	73
Primary Petrochemicals 2/:					
Petroleum Refining	88	81	73	72	74
Industrial Organic Chemicals 3/	80	74	68	56	NA 4/

1/ The rate at which practical capacity for an industry is utilized. In general, practical capacity refers to the maximum output that is technically feasible for a company or for an industry. In practice, the term has different meanings for different industries.

2/ Almost all domestic production of primary petrochemicals is accounted for by companies in one of two industries: petroleum refining and industrial organic chemicals. Operating rates for U.S. primary petrochemicals are not available.

3/ Data are for the fourth quarter.

4/ Not Available.

Sources: U.S. Department of Commerce, Bureau of the Census and Bureau of Economic Analysis.

industrial organic chemicals (SIC 286) operated at successively lower rates from the fourth quarter of 1979 to the fourth quarter of 1982. Figures for 1983 are not yet available.

Employment in the two industries that typically account for 99 percent of U.S. primary petrochemical production, Industrial Organic Chemicals (SIC 286) and Petroleum Refining (SIC 2911), appears to have followed basically the same pattern from 1979 to 1982 as output -- falling in 1980, rising in 1981, and falling in 1982. (See table 3.) But in 1983, employment continued to slide while output increased sharply.

TABLE 3. Total Employment 1/ in the U.S. Chemicals and Allied Products Industry and in the U.S. Primary Petrochemicals Industry 2/, 1979 to 1983 (thousands of workers)

Industry Group	1979	1980	1981	1982	1983
Chemicals and Allied Products 1/	1,109.3	1,107.4	1,109.0	1,079.0	1,046.8
Primary Petrochemicals 1/, 2/	336.6	328.9	350.6	335.0	321.1

1/ Annual average of salaried and hourly employees.

2/ The U.S. primary petrochemicals industry is here defined to comprise producers of industrial organic chemicals (SIC 286) and refined petroleum products (SIC 2911).

Source: U.S. Department of Labor, Bureau of Labor Statistics.

Data for the two industries were used because figures on the number of production workers involved in producing only primary petrochemical are not generally available. Combining the employment figures for the two industries obviously overstates the number of workers producing only primary petrochemicals, but the movement of the combined total should provide some indication of employment changes in primary petrochemical operations.

C. Prices

U.S. prices for primary petrochemicals have been sensitive to the swings in domestic demand for chemical products since 1979, but have also reflected the steep increase in petroleum prices that was associated with the outbreak of war between Iran and Iraq in 1979, and that was passed through in large measure to buyers of hydrocarbon feedstocks. Thus, the Producer Price Index for basic organic chemicals, which includes the six primary petrochemicals examined in this report, soared in 1980 and rose again but not as sharply in 1981. It fell in 1982 and in 1983, but its average level in 1983 was 37 percent above the 1979 level. Similar trends are in evidence for domestically produced benzene, butadiene, ethylene, propylene, and toluene: except for ethylene and propylene, their U.S. prices increased sharply from 1979 to 1981 and then retreated in the following two years. The average U.S. sales price of benzene was 17 percent higher in 1982 than in 1979; of 1,3 butadiene, 59 percent higher; of ethylene, 28 percent higher; of propylene, 90 percent higher; and of xylene, 21 percent higher. (See table 4.)

TABLE 4. U.S. Prices and Price Indexes for Chemicals and Allied Products and Selected Primary Petrochemicals, 1979 to 1983

Product	1979	1980	1981	1982	1983
Chemicals and Allied Products (1967=100)	222.3	260.3	287.6	292.3	296.6
Basic Organic Chemicals (1973=100)	376.4	506.6	585.9	535.7	515.6
Primary Petrochemicals -- Price Indexes (1973=100):					
Benzene 1/	361.3	453.3	482.7	425.8	402.5
1,3 Butadiene 2/	299.3	393.4	477.2	456.8	426.3
Ethylene 1/	443.5	636.0	750.9	579.0	707.1
Propylene -- chemical	439.8	694.7	817.8	845.2	730.1
Propylene -- polymer 1/	354.1	557.6	663.9	683.3	596.4
Toluene 1/	393.8	476.0	513.3	473.5	425.9
Primary Petrochemicals -- Average U.S. Sales Value (dollars per pound):					
Benzene	$0.18	$0.13	$0.23	$0.21	NA 4/
1,3 Butadiene	$0.22	$0.27	$0.34	$0.35	NA
Ethylene	$0.14	$0.22	$0.25	$0.18	NA
Propylene	$0.10	$0.17	$0.19	$0.19	NA
Toluene	$0.15	$0.16	$0.18	$0.18	NA
Xylene (all types)	$0.14	$0.13	$0.19	$0.17	NA

1/ Figure for 1983 is the index level in December of that year.

2/ Figure for 1983 is the index level in October of that year.

3/ N.A. -- not available.

Sources: U.S. Department of Labor, Bureau of Labor Statistics and the U.S. International Trade Commission.

Prices of domestically produced chemicals and allied products as a whole have moved decidely at odds with the industry's trends in output, employment, and operating rates since 1979. Prices rose continuously from 1979 to 1983 -- but at a decreasing rate in 1982 and 1983. The average index level for 1983

stood 33 percent above that for 1979; by comparison, the Producer Price Index for finished goods was 31 percent higher in 1983 than in 1979, and 32 percent higher than the GNP Price Deflator.

D. Net Exports

One measure of the international competitiveness of an industry is net exports, which is the value or quantity of exports of that industry's output less imports. There is strong evidence that U.S. net exports of primary petrochemicals deteriorated sharply after 1979. U.S. net exports of the 6 primary petrochemicals examined in this report went from + $41.5 million in 1979 to -$280.4 million in 1983, a drop of around $322 million. Expressed in physical units, net exports of the 6 fell from -251 million pounds in 1979 to -1,673 million in 1983, a plunge of 566 percent. (See table 5.)

U.S. net exports of all chemicals and allied products have shrunk steadily since 1979, but not as sharply as ther six primary petrochemicals. In 1983, these exports were 9.4 percent below the 1979 level. Most of the decline can be attributed to an increase in U.S. imports of chemicals and allied products over this period. U.S. exports of these products were 14.1 percent higher in 1983 than in 1979, but imports were 42.2 percent higher.

Imports have also made inroads in the U.S. petrochemical market since 1979. The share of apparent domestic consumption -- shipments by U.S. producers + imports - exports -- of six primary petrochemicals held by imports nearly doubled between 1979 and 1982 -- from 3.3 percent to 6.2 percent. The share slipped to 5.3 percent in 1983. These gains exacerbated the fall in U.S. production of primary petrochemicals from 1979 to 1982.

TABLE 5. U.S. Trade Balance: Chemicals and Allied Products and Six Primary Petrochemicals 1/ , 1979 to 1983

Chemicals and Allied Products ($ billions)

Year	Exports	Imports 2/	Trade Balance 3/
1979	17.306	7.898	9.408
1980	20.740	9.011	11.729
1981	21.187	9.882	11.305
1982	19.890	9.862	10.028
1983	19.751	11.230	8.521

Six Primary Petrochemicals 1/ ($ millions)

Year	Exports	Imports 2/	Trade Balance 3/
1979	417.5	376.0	41.5
1980	516.8	527.0	-10.2
1981	653.4	615.0	38.4
1982	523.1	705.0	-181.9
1983	427.6	708.0	-280.4

(millions of pounds)

Year	Exports	Imports 2/	Trade Balance 3/
1979	2,743	2,494	-251
1980	2,235	2,940	-705
1981	2,653	2,943	-290
1982	2,240	3,641	-1,401
1983	2,002	3,675	-1,673

1/ The six are benzene, butadiene 1,3, ethylene, propylene, toluene, and xylene.

2/ Imports are valued on a c.i.f. basis (cost, insurance, and freight).

3/ The trade balance (or net exports) = the value or quantity of exports minus the same measure of imports.

Sources: U.S. Department of Commerce, Bureau of the Census and Bureau of Industrial Economics.

A similar pattern is in evidence for chemicals and allied products, but to a much lesser extent. Imports accounted for 6.2 percent of apparent domestic consumption in 1983, compared with 5.7 percent in 1979.

TABLE 6. Imports as a Percent of Apparent Domestic Consumption, Chemicals and Allied Products, and Primary Petrochemicals, 1979 to 1983

Year	Chemicals and Allied Products	Six Primary Petrochemicals
1979	5.7	3.3
1980	6.0	3.9
1981	5.8	4.3
1982	6.1	6.2
1983	6.2	5.3

Note: Apparent domestic consumption = shipments by U.S. manufacturers + imports - exports. The six petrochemicals are benzene; butadiene 1,3; ethylene; propylene; toluene; and xylene.

Sources: U.S. Department of Commerce, Bureau of the Census and Bureau of Industrial Economics.

III. FACTORS BEHIND THE TRENDS

The experience of U.S. primary petrochemicals producers since 1979 appears to be the combined effect of several long- and short-term developments in the United States and in the world economy -- some unrelated to the petrochemical industry and its markets.

A. Slowdown in Market Penetration

There are indications that, in some major end-use markets, much of the potential substitution of products derived from petrochemicals for other materials had already been achieved by the late 1970s. This afforded fewer and/or more difficult opportunities for further substitution the 1980s. For

example, man-made fibers increased their share of combined cotton, wool, and synthetic fiber consumption from 21 percent in 1950 to 57 percent in 1970, to 70 percent in 1975, and up to 77 percent in 1979, before levelling off.

Similarly, the proportion of U.S. consumption of rubber accounted for by the synthetic variety increased from 43 percent in 1950 to 77 percent in 1970, but leveled off at about that percentage between 1970 and 1979, and has since decreased to about 73 percent.

In the case of plastics, penetration in most container markets appears to have slowed. Between 1972 and 1978, shipments of plastic bottles used for toiletries, cosmetics, medicines, sundries, and household cleaning and polishing substances rose 47 percent between 1972 and 1978 while consumer purchases of those products (in constant dollars) increased 7 percent. Between 1978 and 1982, however, shipments of plastic bottles used for those products rose 4 percent while consumer purchases decreased 1 percent. The listed products accounted for 63 percent of total shipments of plastic bottles in 1978. In recent years, plastic bottles have made large gains only in food and beverage container markets. In the automotive market, use of plastics in passenger cars jumped from 12 pounds per car in 1959 to about 190 pounds per car in 1979, but only to about 200 pounds in 1983. 9/

B. Weakness in Domestic End-Use Markets

U.S. production of primary petrochemicals after 1979 also has been greatly affected by factors not related to petrochemical products, such as general

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9/ Ward's Communications, Inc. Ward's Automotive Yearbook, 1983. Detroit: 1983. p. 23.

economic recessions and problems of specific U.S. industries. These developments affected several major markets for U.S.-produced petrochemicals -- both in U.S. end-use markets for products derived from primary petrochemicals and in the U.S. industries processing or fabricating the U.S. made end-use products. Developments in foreign markets, in the emergence and growth of foreign competitors, and other international factors affecting U.S petrochemical production are discussed later in this section. 10/

Weakness in U.S. end-use markets was particularly severe in the early 1980s. Here are the major examples, not necessarily in order of importance.

* Automotive (rubber, plastics, fibers): Between 1979 and 1982, retail sales of passenger cars (in units) decreased 24 percent; retail sales U.S. made cars dropped 30 percent; factory sales of U.S. made trucks fell 37 percent.

* Housing (plastics, adhesives, paints, fibers): U.S. housing starts decreased 39 percent between 1979 and 1982. (Fibers are mentioned because of the wall-to-wall carpeting installed in many new houses by builders or by the purchasers.)

* Agriculture (fertilizers, pesticides): Use of fertilizers and pestcides by farmers is highly sensitive to profits as well as acreage. Corporate profits before taxes in agriculture, forestry, and fisheries plummeted 86 percent between 1979 and 1982. 11/ Proprietors' farm income fell 33 percent.

* Home furnishings and appliances (fibers, plastics): Retail sales in constant dollars at furniture, homefurnishings, and appliance stores fell an estimated 12 percent between 1979 and 1982. 12/

10/ The authors recognize that some of the "problems of specific U.S industries" are attributable to the vigor of foreign competition and other internationally-related factors. Analysis of non-petrochemical industries is, however, beyond the scope of this report. Analysis of factors related to foreign trade was placed below for the sake of organizational simplicity.

11/ Agriculture, for which 1982 data are not yet available, usually accounts for about three fourths of total profits in the overall category.

12/ These figures are meant to be indicative of conditions in the end-use market as a whole. Furniture, homefurnishings, and appliances are, of course, also sold in general merchandise stores.

* Mining (explosives, surface active agents): Activity in mining other than oil and natural gas extraction decreased sharply in the early Eighties. Between 1979 and 1982, mining production (excluding oil and gas) fell 14 percent, as measured by the Federal Reserve Board production indexes.

* Apparel (fibers, rubber): Retail sales in constant dollars at apparel stores (including footwear) increased only two percent between 1979 and 1982. The value of shipments in constant dollars by U.S. manufacturers of apparel and other textile products decreased four percent over that period.

C. Higher Costs Due to Regulatory Changes

The competitiveness of U.S.-produced primary petrochemicals and their derivatives vis-a-vis other goods as a whole and foreign-produced petrochemicals in particular probably was adversely affected by two important regulatory-type changes: Passage of the Natural Gas Policy Act of 1978 -- which partially deregulated natural gas wellhead prices; and removal of controls on the wellhead prices of crude oil. These actions resulted in increases in production and other costs that producers would try to at least partially pass on to customers. Prior to these events, prices of hydrocarbons in the United States were somewhat lower than those abroad, to the advantage of U.S. petrochemical producers.

Movements in the prices of energy sources are particularly important to petrochemical producers because the production of petrochemicals involves both the use of petroleum and natural gas feedstocks as raw materials and, generally, highly energy-intensive processes. For example, on average, 17 percent of the selling price of items produced by the Industrial Organic Chemicals Industry (SIC 2869) was accounted for by the cost of hydrocarbon feedstocks and of energy for heat and power in 1981. The average ratio

reflects many second-step higher value products of the industry; the proportions for many individual primary petrochemicals are higher.

The Natural Gas Policy Act of 1978 (P.L. 95-621) eliminated price controls on the wellhead prices of several categories of natural gas, relaxed controls on some other categories, and provided for eventual decontrol of some categories. It also made a variety of related other changes that, combined with the foregoing, essentially allows natural gas prices paid by users to track world energy prices and domestic petroleum product prices more closely than before, and even exceed domestic petroleum prices in some cases. Most of the provisions of the Act became effective December 1, 1978.

Full decontrol of domestic crude oil prices was declared by President Reagan on January 28, 1981. Domestic crude oil prices were undergoing gradual decontrol at the time and were scheduled to be phased out completely by September 30, 1981 under a schedule implemented by President Carter in 1979. By early 1979, as a result of price controls that had been in effect since 1971, domestic crude oil was priced significantly under world oil prices. Domestic prices of petroleum products were, correspondingly, lower as well.

D. Appreciation of the U.S. Dollar Against Major Foreign Currencies

The sharp rise in the value of the U.S. dollar in key foreign exchange markets is believed to be a major cause of the deterioration in U.S. net exports of primary petrochemicals since 1979. Fluctuations in the value of the dollar change the relative prices of U.S. imports and exports. In the case of primary petrochemicals, whenever the dollar goes up in value against the currencies of countries that are major sources of these products, U.S. primary petrochemicals become less price competitive in key foreign markets and foreign petrochemicals become more price competitive in the U.S. market. Clearly, such a situation can harm U.S. net exports of primary petrochemicals by restraining exports and boosting imports.

Between January 1, 1979 and June 15, 1984, the trade-weighted average value of the dollar against 15 major foreign currencies increased by 27.7 percent. 13/ Among the 15 are the currencies of Japan and the Common Market countries, all leading suppliers of primary petrochemicals.

13/ The trade-weighted average value of the U.S. dollar is computed by multiplying the average value of the dollar against other major currencies (e.g., the Japanese Yen, the West German Mark, the British Pound) by the percentage of U.S. trade they account for. For more information, see: Library of Congress. Congressional Research Service. Exchange Rates: The Dollar In International Markets. Issue Brief Number IB78033, by Arlene Wilson, June 22, 1984 (continually updated). Washington, D.C., 1984.

E. Sluggishness in Key Export Markets

Slower economic growth throughout the industrial and newly industrializing world since 1980 has also contributed to the recent problems of U.S. petrochemical producers. Protracted recession in foreign countries that tend to buy sizable quantities of U.S. petrochemicals usually depresses or freezes their demand for petrochemicals. This, in turn, can constrain U.S. exports and -- ultimately -- production of these chemicals.

Since the late 1970s, the major foreign markets for U.S. primary petrochemicals have been Belgium, Canada, Italy, Mexico, the Netherlands, Venezuela, and the United Kingdom. In 1981, the peak year for U.S. exports of chemicals and allied products, Canada and Mexico accounted for 96 percent of the volume of U.S. propylene exports and 99 percent of butadiene exports; Belgium, for 21 percent of para-xylene exports; Italy, for 15 percent of benzene, toluene, and mixed xylene exports combined; the Netherlands, for 24 percent of the same; Venezuela, for 43 percent of ethylene exports; and the United Kingdom, for 11 percent of mixed xylene exports.

Except for Mexico, the economies of all these countries have hardly prospered since 1979. According to economic statistics reported by the United Nations, Belgian manufacturing output was 4.2 percent lower in 1982 than in 1979; in Canada, it was 7.5 percent lower in 1983; in Italy, only 0.8 percent higher in 1982; in the Netherlands, the same in both 1983 and 1979; and in the United Kingdom, 13.0 percent lower in 1983. Although aggregate production data for Venezuela are not readily available, there is some evidence that its economy has followed a similar course: the International Monetary Fund (IMF) estimates that Venezuela's real Gross Domestic Product (1980 prices) was -0.7 percent lower in 1983 than in 1979.

Despite rapid growth in its economy for most of the period since 1979, there are signs that even Mexico has become a less promising market for U.S. petrochemicals within the past few years. The country's manufacturing sector slipped into recession in 1982: output was 4 percent below the level in 1981. Moreover, its ability to pay for U.S. goods has weakened considerably since 1981: IMF data reveal that the average daily market exchange rate of the peso against the dollar in 1983 was 118 percent lower than in 1982 and that the 1982 level was 124 percent lower than in 1981.

F. Imports of Primary Petrochemicals From Countries Rich in Hydrocarbons

There is reason to believe that a small part of the decline in U.S. production of primary petrochemicals since 1979 is due to increasing penetration of the U.S. market by imports from countries that possess abundant and cheap supplies of crude oil and natural gas -- the raw materials that form the basis of the feedstocks that account for 99 percent of primary petrochemical production in the United States. Some experts estimate that the cost of hydrocarbon feedstocks now represent 50 to 90 percent of the cost of producing various primary petrochemicals. 14/ Thus, petrochemical-producing countries with cheaper sources of these feedstocks than the United States could have a comparative advantage in the world market for petrochemicals.

Two such countries are Canada and Mexico. Canada exported to the United States 39 percent more benzene, 149 percent more toluene, 208 percent more xylene, and 74 percent more butadiene, butylene, ethylene, and propylene combined in 1983 than in 1978. Similarly, Mexico exported to the United States

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14/ Standard & Poor's Industry Surveys. Chemicals: Basic Analysis. New York. June 21, 1984. p. C32.

virtually no benzene and toluene in 1978; but in 1983 exports of the former totalled 1.267 million gallons and of the latter 294 thousand gallons.

Even with these gains, however, neither country was a major force in the U.S. market in 1983. For example, imports of Canadian benzene represented only 2.4 percent of apparent domestic consumption; and imports of Canadian toluene, 5.0 percent.

This situation could change drastically in the next five or ten years. A number of hydrocarbon-rich countries are building the capacity to produce a variety of petrochemicals or are expanding and diversifying existing capacity. 15/ Besides Canada and Mexico, this group includes Saudi Arabia, Kuwait, Indonesia, the Soviet Union and the People's Republic of China. Some experts on the chemical industry predict that these countries will capture ever-increasing shares of the world petrochemical market over the next five to ten years, largely because of their inexpensive hydrocarbon feedstocks and their heavy investment in the most modern processing technologies. 16/ The key results of a recent study of the outlook for the world market for three primary petrochemicals -- ethylene, ammonia, and methanol -- by the U.S. International Trade Commission offer a case in point. They are summarized in table 7.

15/ Restructuring: How The Chemical Industry Is Building Its Future. Chemical Week. October 26, 1983. p. 28-31.

16/ See: U.S. International Trade Commission. The Probable Impact on the U.S. Petrochemical Industry of the Expanding Petrochemical Industries in the Conventional-Energy-Rich Nations. USITC Publication 1370. Washington, D.C. April 1983. p. 1-16.

TABLE 7. Share of World Production Capacity For Three Primary Petrochemicals Held By Selected Hydrocarbon-Rich Countries. Estimated for 1980 and Projected for 1990. (%)

Country	Ethylene 1980	Ethylene 1990	Ammonia 1980	Ammonia 1990	Methanol 1980	Methanol 1990
Canada	3	6	2	3	3	7
Indonesia	1	1	1	2	1	1
Kuwait	a/	1	1	1	a/	1
Mexico	1	2	2	4	1	4
People's Republic of China	1	3	12	10	2	2
Saudi Arabia	a/	2	a/	a/	2	4
Soviet Union	5	7	22	28	15	17

a/ Less than 0.5 percent.

Source: U.S. International Trade Commission. The Probable Impact on the U.S. Petrochemical Industry of the Expanding Petrochemical Industries in the Conventional-Energy-Rich Nations. USITC Publication 1370. Washington, D.C. April 1983. p. 5.

G. Growth in Imports of Goods Derived From Petrochemicals

Another factor that has held down the growth of the U.S. petrochemical industry since 1979 is the jump in imports of goods that are made, at least in part, from petrochemicals. 17/

Two of the biggest end-users of petrochemicals are the automobile and textile and apparel industries. The automobile industry tends to consume enormous quantities of rubber and plastics, and the textile and apparel industry accounts for almost all synthetic fiber consumption.

17/ Steven Greenhouse. Shakeout for Petrochemicals. New York Times. Monday, February 20, 1984. p. D4.

Between 1979 and 1983, the number of new assembled passenger cars, trucks, and buses imported by the United States rose at an average annual rate of 7.9 percent; during the same period, U.S. imports of synthetic-fiber textile manufactures (in millions of equivalent square yards) -- including wearing apparel, rugs, and draperies -- went up at a rate of 12.7 percent per year. By contrast, the U.S. Commerce Department estimates that U.S. production (in millions of pounds) of all primary petrochemicals declined at an average annual rate of 3.7 percent from 1979 to 1983.

H. Implications of the Superfund Taxes for U.S. Production of Primary Petrochemicals So Far

The Superfund taxes function as an environmental excise tax: for every ton of crude oil or one of twelve primary petrochemicals or one of thirty inorganic chemicals used or sold by a U.S. producer, the producer must pay a fixed amount to the Federal Government. The tax on primary petrochemicals is $4.87 per ton, except for methane, which is taxed at a rate of $3.44 per ton, and ammonia, which is taxed at a rate of $2.64 per ton.

Levying the taxes has the effect of raising the cost of producing the taxable products by an amount equal to the tax. Producers can respond to the tax in one of three ways: (1) absorb it, thereby reducing profit margins; (2) pass part or all of it on to buyers, thereby preserving profit margins but risking reduced sales; or (3) pass part or all of it backwards by lowering their employees' wages or negotiating price reductions with suppliers. How producers adjust their pricing strategies to the taxes determines the incidence of the taxes.

A detailed analysis of the incidence of the Superfund taxes within the U.S. chemical industry is beyond the scope of this report. It is possible, however, to discuss briefly (1) how burdensome the taxes have been to U.S.

petrochemical producers and (2) how much of the decline in U.S. demand for primary petrochemicals since 1981 might be due to the taxes in and of themselves.

Table 8 shows the burden of the Superfund taxes for six primary petrochemicals (defined here as the tax as a percent of average sales value). For three of the six -- benzene, ethylene, and xylene -- the burden increased from 1981 to 1982; for two -- propylene and toluene -- it remained constant; and for one -- butadiene 1,3 -- it dropped slightly. Data on U.S. sales of the six in 1983 are not available yet. The average burden for the six in 1981 was 1.11 percent of the average U.S. sales value, and in 1982, 1.21 percent. As the amounts of the Superfund taxes have not changed, increases or decreases in the burden have been due to decreases or increases in sales values (prices).

TABLE 8. Superfund Taxes as a Percentage of Average U.S. Sales Value for Six Primary Petrochemicals, 1981 and 1982 (%)

Petrochemical	1981	1982	% Change in Tax Burden, 1981 to 1982
Benzene	1.06	1.16	9.4
Butadiene 1,3	0.71	0.69	-2.8
Ethylene	0.97	1.35	39.2
Propylene	1.28	1.28	0.0
Toluene	1.35	1.35	0.0
Xylene	1.28	1.43	11.7

Sources: U.S. Department of the Treasury; U.S. International Trade Commission.

To estimate how the Superfund taxes may have affected U.S. consumption of primary petrochemicals since they were first levied in 1981 one needs to know how demand for these chemicals tends to respond in the short run to changes in their price. This responsiveness is often referred to among economists as the short-run price elasticity of demand. Multiplying the increase in primary petrochemical prices resulting from the taxes by the elasticity coefficient for these chemicals will yield an estimate of the maximum possible fall in consumption that can be attributed to the taxes.

Some analysts estimate that the price elasticity of demand in the short run for chemicals and allied products ranges from -0.7 to -0.9. 18/ This means that for every 10 percent rise in price, the quantity of these products demanded will drop anywhere from 7 to 9 percent, a sign that demand is inelastic. Since primary petrochemicals are producer goods -- which is to say that they undergo further processing before ending up in final products -- it is likely that their coefficients are even lower or more inelastic, perhaps in the range of -0.5 to -0.7. 19/

18/ International Trade Commission. op. cit., p. 178.

19/ Estimates of the short-run price elasticity of demand for primary petrochemicals are not readily available. A recent study of the impact of Superfund taxes on the U.S. petrochemical industry specifies a demand elasticity for polypropylene -- a derivative of propylene used to make plastic packaging materials -- of -.53. Though the study does not explain how it arrived at such a figure, it may be indicative of the demand elasticity for primary petrochemicals as a whole. See: Management Analysis Center, Inc. Superfund Financing: An Analysis of CERCLA Taxes and Alternative Revenue Approaches. Los Angeles, CA. March 6, 1984. p. 65.

It is highly unlikely that the Superfund taxes played a major role in the weakening of U.S. primary petrochemical use in 1981 and 1982. Apparent domestic consumption (i.e., shipments by U.S. producers + imports - exports) of the six primary petrochemicals fell 7.8 percent in 1981. Assuming that (1) U.S. producers of the six passed the full amount of the taxes on to buyers within that year and (2) that the average short-run price elasticity of demand for the six is -0.7 -- a liberal allowance given that the chemicals are all producer goods -- then the taxes could have caused apparent consumption to fall by no more than 0.777 percent in 1981. 20/ This represents about 10 percent of the actual decline in 1981.

The same would apply to 1982. Apparent domestic consumption of the six primary petrochemicals dropped another 15.2 percent that year. If one assumes for the sake of analysis that the taxes were levied for the first time in 1982, then even less of the actual decline in U.S. consumption in 1982 could be due to the taxes. To be more precise, assuming once again that the full amount of the taxes were passed forward in 1982 and that the short-run price elasticity of demand for the six primary petrochemicals is -0.7, the taxes would have caused domestic consumption to fall no more than 0.847 percent -the short-run demand elasticity multiplied by the average burden in 1982, which was 1.21 percent of the average sales value. This represents 5.5 percent of the actual decline in 1982.

20/ This figure is the result of multiplying the short-run demand elasticity (-.7) by the average burden of the Superfund taxes on the six petrochemicals in 1981 (1.11 percent of the average sales value). The burden shows the average change in product prices due to imposing the taxes.

mls

APPENDIX A-2

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Washington, D.C. 20540

August 20, 1984

TO: Senate Commitee on the Environment and Public Works
Attention: Curtis Moore

FROM: Bernard A. Gelb and
Gary L. Guenther
Analysts in Industry Economics
Economics Division

SUBJECT: Wall Street analysts' reasons for the decline in U.S. production of primary petrochemicals.

This memorandum responds to your request for Wall Street's perspective on the decline in U.S. primary petrochemical production since the late 1970s. Because of the summer vacation season, we were able to get the views of only one financial analyst with a strong background in the U.S. chemical industry: William Young of Dean Witter Reynolds. To make up for the paucity of opinion from the U.S. financial community, we solicited the views of three highly respected experts on the industry: Myron Foveaux (Chemical Manufacturers Association), Charles H. Kline (Charles H. Kline & Co.), and Ronald Whitfield (Data Resources, Inc.) Their comments, along with those of William Young, are summarized below. To deepen your understanding of the recent troubles of U.S. petrochemical producers, we are enclosing copies of relevant articles (mostly from the business press) which -- in some cases -- include the assessments of noted Wall Street analysts.

William Young said that, during the late 1970s, U.S. producers underestimated the responsiveness of demand to price increases, and expected sales of petrochemicals to expand indefinitely at the rates that previously prevailed. In the early 1980s, however, domestic demand slackened when they raised prices

to recoup rises in production costs. At the same time, production capacity grew rapidly elsewhere in the world, and the dollar strengthened against all major currencies. These two developments boosted U.S. imports of primary petrochemicals and dampened U.S. exports. The combined effect of the price increases and the deterioration in the U.S. trade balance in petrochemicals was to depress U.S. primary petrochemical production. Prolonged worldwide overcapacity, commented Mr. Young, is the main cause of the current profit problems of U.S. petrochemical producers. In Mr. Young's view, the Superfund taxes were not a big factor in the downturn in U.S. primary petrochemical production in 1980 to 1982.

According to Myron Fouveaux, the key factors causing the downturn in U.S. production of primary petrochemicals between 1979 and 1983 were the economic recessions of 1980 and 1981-82, growth in surplus petrochemical production capacity in the world, and the rise in the value of the dollar relative to other currencies (which led to a sharp drop in U.S. exports of petrochemicals). Fouveaux believes that the Superfund taxes played a minor role in the downturn; if anything, they exacerbated existing trends. Looking to the future, he argues that sizable increases in Superfund tax rates for primary petrochemicals will seriously hurt the international competitiveness of U.S. producers of primary petrochemicals.

Charles Kline believes that the decline in U.S. primary petrochemical production reflects the "maturing" of the industry. Concrete signs of this abound, in his view. First, growth in demand for the industry's products is slowing, partly as a result of an inevitable slowdown in the rate of substitution of petrochemical-derived products (e.g., plastics and synthetic rubber and fibers) for traditional materials. Second, the rate of product and process innovation in petrochemicals is down from previous levels. Third, new production capacity

in other hydrocarbon-rich countries (e.g., Kuwait, Saudi Arabia, Canada, Mexico) is increasing rapidly, cutting into export markets and weakening prices. And fourth, falling profits are diminishing the industry's ability and willingness to invest heavily in new processes or equipment.

Mr. Kline feels that the Superfund taxes have had a relatively small impact on the fortunes of the U.S. petrochemical industry since they went into effect in early 1981. He believes that the dollar cost is small, and that a more important effect of environmental laws is the time and energy that management has to devote to implementing the requirements.

Ronald Whitfield attributes the drop in domestic primary petrochemical output since the late 1970s to (1) the recessions of 1980 and 1981-82, (2) a slowdown in the penetration of new markets by plastics, (3) the sharp appreciation of the U.S. dollar against other currencies, and (4) rapid growth in petrochemical capacity in Canada, Mexico, and the Middle and Far East. His view of the impact of the Superfund taxes on the industry so far is that they have played only a small role in the petrochemical industry's recent troubles. This he attributes to the fact that the taxes have been small relative to average U.S. production costs for primary petrochemicals. However, he feels that big increases in the taxes on primary petrochemicals could hurt the future competitive position of U.S. producers of downstream petrochemicals (e.g., styrene, polypropylene, phenol) at home and abroad -- provided, of course, that they attempt to pass the higher taxes on to buyers and that imports of these petrochemicals continue to <u>not</u> be subject to Superfund taxes.

We hope you find this distillation of views useful and instructive. If you have any questions about this memorandum or related matters, please contact Mr. Gelb at 287-7738 or Mr. Guenther at 287-7742.

APPENDIX B

FINANCING SUPERFUND: AN ANALYSIS OF CERCLA TAXES AND ALTERNATIVE REVENUE APPROACHES

Final Report For
The Atlantic Richfield Company

by

Dr. William D. Nordhaus
and
Management Analysis Center, Inc.

June 1984

IV. ECONOMIC IMPACT ANALYSIS

This chapter contains our analysis of the economic effects of feedstock taxes. The CERCLA feedstock taxes are a form of intermediate product tax. The taxable event is the production or importation of chemicals that are sold not to consumers but, rather, to downstream producers, who use the chemicals further in manufacturing. Intermediate product taxes are imposed in the middle of the production chain, rather than on the basic inputs or the final outputs of the system. By contrast, the income tax is imposed on income from the basic inputs of production--labor (wages), capital (interest, profits, and dividends), and land (rent)--while sales taxes are imposed on the sale of output to ultimate consumers.

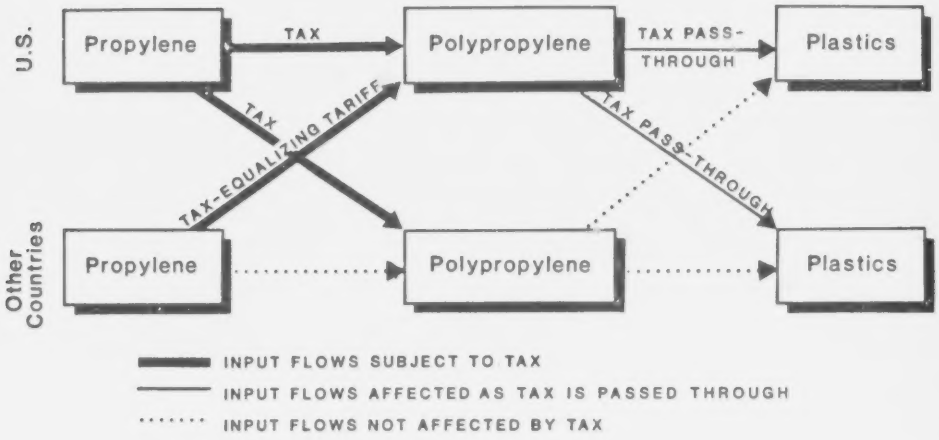
Intermediate product taxes, like the CERCLA feedstock taxes, create economic distortions by setting up powerful incentives to avoid paying the tax in circumstances where avoidance is frequently easy. The CERCLA feedstock taxes are imposed on the primary petrochemicals used to make most rubber and plastics, among other products. The tax can be avoided by substituting wood, glass, or metal for plastics. It can also be avoided by substituting plastics made with foreign petrochemical feedstocks for plastics made with U.S. petrochemical feedstocks.

Exhibit 9 shows how the intermediate product tax is avoided in the case of international trade in propylene (one of the petrochemical feedstocks taxed by CERCLA) and polypropylene (a plastic and the major propylene derivative). The heavy lines show the taxed propylene--U.S.-produced propylene, whether for domestic use or for export, and U.S.-imported propylene, which has an equalizing tariff imposed on it. Because of the tariff, domestic propylene is not disadvantaged relative to imported propylene for use in U.S. manufacture of polypropylene. However, U.S. propylene is subjected to a competitive disadvantage in the export market.

The export disadvantage occurs in the polypropylene market as well, where U.S.-produced polypropylene bears the CERCLA feedstock tax to the extent that it has been passed through into cost of propylene, as shown by the lighter lines in Exhibit 9. Polypropylene produced in other countries carries no such tax passed through. In addition, because imports of polypropylene into the United States

EXHIBIT 9

COMPETITIVE DISADVANTAGE OF U.S.-PRODUCED POLYPROPYLENE CAUSED BY TAX ON PROPYLENE



are not subject to a tax, imported polypropylene gains a cost advantage over domestically-produced polypropylene. Domestic, as well as foreign, plastics producers can avoid paying the CERCLA taxes by buying polypropylene from foreign sources.

From an economic point of view, the CERCLA tax on propylene is an export tax on both propylene and polypropylene, and a subsidy to imported polypropylene. Polypropylene is used here as an example. More generally, the CERCLA tax is a tax on exports and a subsidy to imports of the downstream derivatives of all the taxed chemicals. Our petrochemical trade model, presented later in this chapter, estimates the size of the shifts in production and trade caused by the export tax and import subsidy on two petrochemicals.

One economic justification for an intermediate product tax, like the CERCLA taxes, might be that the tax compensates for the external costs created by hazardous waste. In this view, by causing the generators of hazardous products to pay for some of the external costs placed on society by their actions, CERCLA taxes would thereby improve the allocation of resources, rather than to distort it. In fact, as we later show, the CERCLA taxes are particularly ill-designed as externality taxes. By being levied on the production of feedstocks, rather than on the generation or disposal of hazardous substances, the tax passes through on aspirin as well as PCBs. Feedstock taxes are too indiscriminate to be effective externality taxes. To demonstrate this point, we have developed a tax incidence model to show where the CERCLA tax on propylene is passed through to derivatives that are both hazardous and nonhazardous.

We begin this chapter with some background data on the production, prices, imports, and exports of petrochemicals in the United States. The second section presents the petrochemical trade model, and the third section presents the tax incidence model. The last section summarizes the results of these economic analyses.

PETROCHEMICAL INDUSTRY DATA

Between 1979 and 1982, exports and imports of the U.S. petrochemical industry increased 8% and 35%, respectively.[1] In 1982, the United States was, in general, a

net importer of primary petrochemicals and a net exporter of those derivatives tracked in our analysis. (The derivatives that we selected were those with large import or export volumes.) Exhibit 10 shows U.S. net trade as a percent of production for the primary petrochemicals and the derivatives. The United States was a net importer of all the primary petrochemicals except xylene, and in contrast, a net exporter of all the major derivatives except cumene. (For the eleven primary petrochemicals and eight major derivatives, data on U.S. production, prices, exports, and imports for the period 1979 through 1982 are provided in Appendix B.)

In the last ten years, international trade in petrochemicals has become more important relative to production. Petrochemicals have made a net positive contribution to the U.S. balance of trade in that period. Exhibits 11 through 13 show production, imports, and exports of polyethylene, polypropylene, and styrene, in which this trend is apparent. Although the trade balance in these three chemicals has remained strong, overall, the growth of imports outpaced the growth in exports between 1979 and 1982. A positive trade balance of about $2.8 billion in 1979 declined 15% to $2.3 billion in 1982.[2]

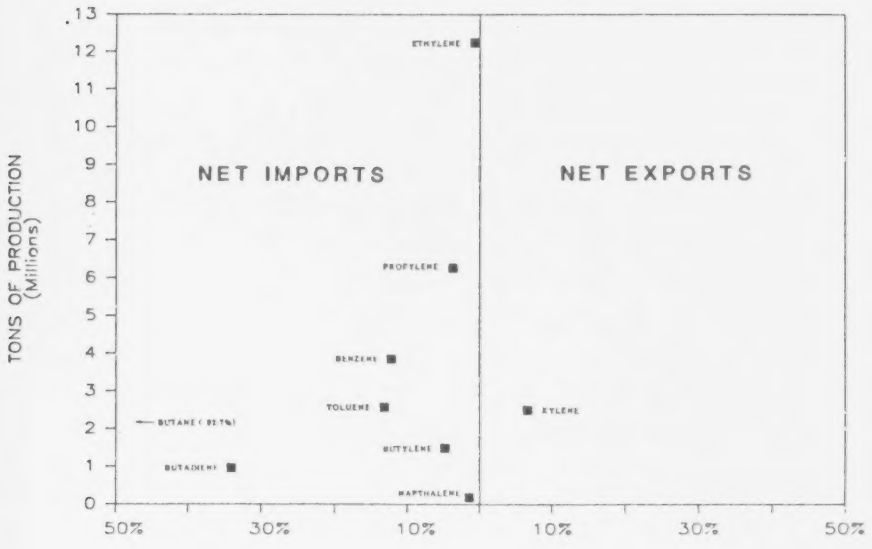
Capacity Trends

Large-scale petrochemical capacity is under construction in Saudi Arabia and Canada. The new Saudi Arabian and Canadian plants, which are expected to be operational by 1987, will add 5% to world ethylene production capacity (available in 1982). The principal raw material for the production of ethylene is ethane, which is abundant in Saudi Arabia and Canada as a low cost byproduct of crude oil and natural gas production. Because ethylene is very expensive to transport, production of its derivatives is incorporated into ethylene complexes. The Saudi Arabian plants, which will produce principally for export, will be able to produce, among others:[3]

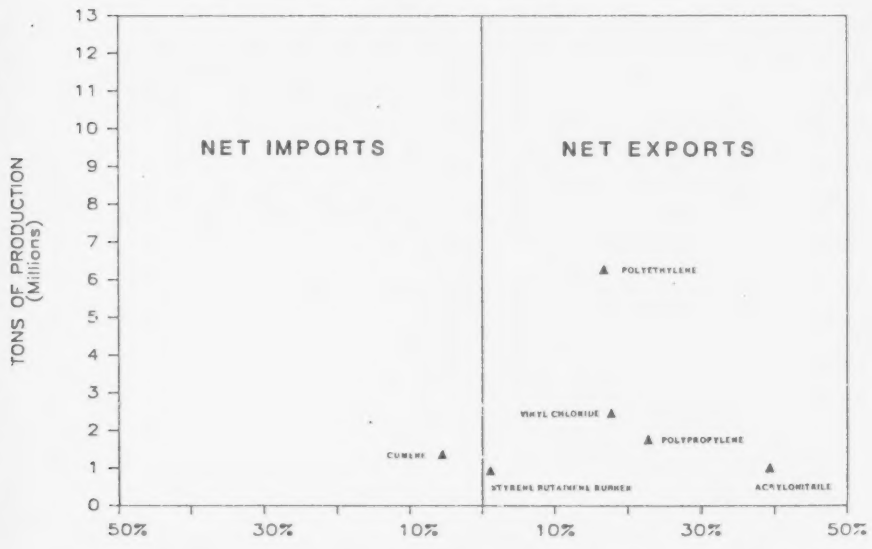
- 300,000 metric tons of styrene monomer, which is 40% of 1982 world trade in styrene.
- 450,000 metric tons of ethylene dichloride (EDC), which is 60% of 1982 world trade in EDC.

EXHIBIT 10
U.S. TRADE AS A PERCENT OF U.S. PRODUCTION

Primary Petrochemicals



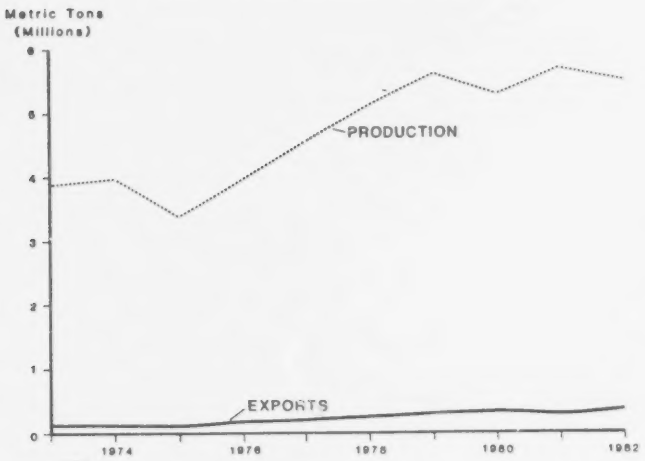
Major Derivatives



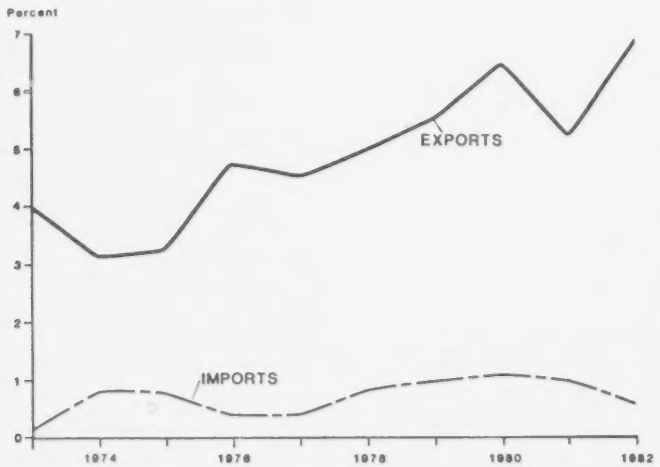
Note: This exhibit can be interpreted using the following example: Of the approximately 6 million tons of polyethylene produced in the United States, about 18% is exported on a net basis.

EXHIBIT 11
U.S. PRODUCTION AND TRADE IN POLYETHYLENE

U.S. Production & Exports



U.S. Exports & Imports as a Percent of Production

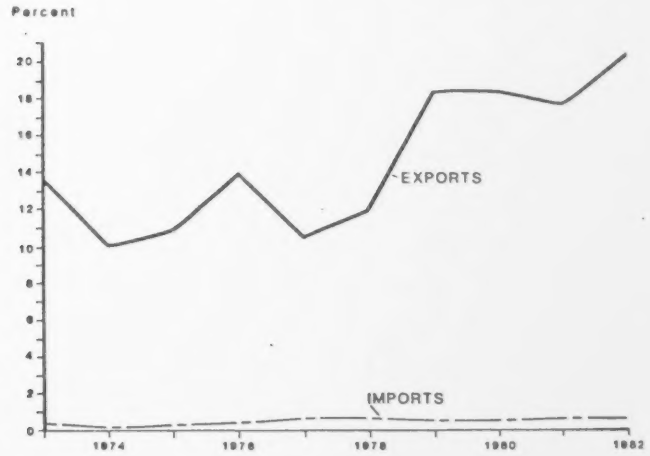


Source: Current Business, April 1983.
Modern Plastics, January 1983, p. 68.

EXHIBIT 12
U.S. PRODUCTION AND TRADE IN POLYPROPYLENE

U.S. Sales & Exports

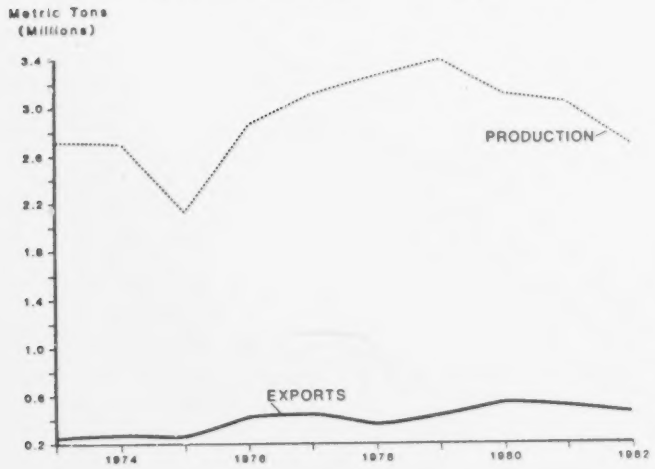
U.S. Exports & Imports as a Percent of Sales



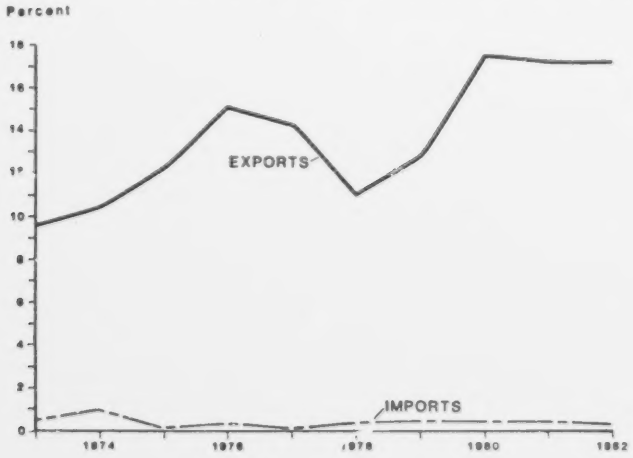
Source: Modern Plastics January, 1983, pp. 65, 69.

EXHIBIT 13
U.S. PRODUCTION AND TRADE IN STYRENE

U.S. Production & Exports



U.S. Exports & Imports as A Percent of Production



Source: Chemical and Engineering News, June 13, 1983, p. 31.

- 680,000 metric tons of polyethylene, which is 30% of 1982 world trade in polyethylene.

Due to the low cost natural gas available to them, these new plants will be among the lowest-cost world producers. As a result of this new capacity, U.S. exports of ethylene-based petrochemicals are expected to fall in the late 1980s.

PETROCHEMICAL TRADE MODEL

The CERCLA taxes on chemical feedstocks cause distortions in international trade of the feedstocks and their downstream products. The magnitude of the incentive to avoid paying these taxes by switching to foreign suppliers depends on how high the taxes are. In order to assess the importance of the proposed increases in the CERCLA taxes, we have developed an economic model that calculates the effects of feedstock taxes on U.S. and foreign production and trade in petrochemical feedstocks and derivative products.

Economic studies indicate that increasing the taxes on U.S. production of petrochemicals will reduce the U.S. cost advantage in petrochemical products relative to foreign sources, leading to:

- Reductions in U.S. exports of both primary petrochemicals and their derivative products, because of the tax on U.S. exports.

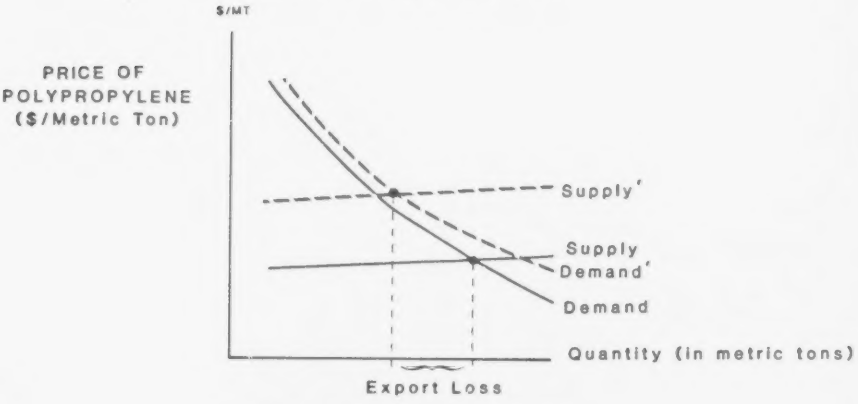
- Increases in U.S. imports of petrochemical derivative products, because of the effective subsidy of foreign sources.

- Reductions in U.S. production of both primary petrochemicals and their derivative products, because of the changes in exports and imports, and the substitution of alternative products for petrochemical products.

Exhibit 14 illustrates the first two of these effects on polypropylene using two equilibrium analyses. In the market for U.S. exports, domestic producers sell polypropylene outside the United States, and foreign producers of plastic products buy from the United States. Increases in the CERCLA tax rates raise the U.S. cost

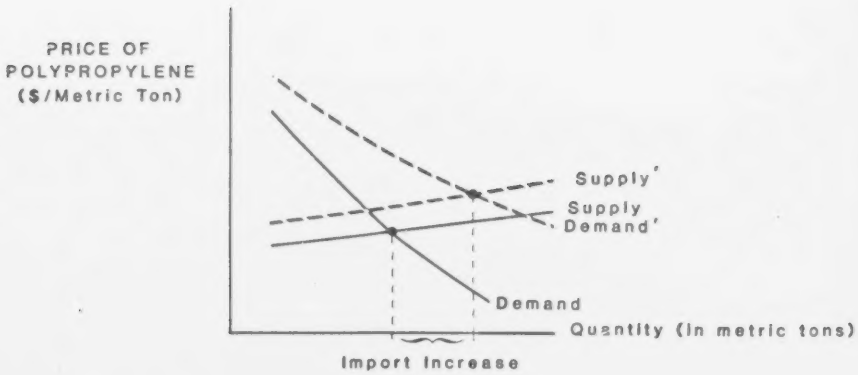
EXHIBIT 14
PARTIAL EQUILIBRIUM ANALYSIS OF INTERMEDIATE PRODUCTS TAXES

(A) Market for U.S. Exports



The United States supplies;
the rest of the world demands.

(B) Market for U.S. Imports



The rest of the world supplies;
the United States demands.

of producing polypropylene, and, in turn, raise the price of U.S.-exported polypropylene and reduce its volume. Many of the foreign buyers that no longer buy polypropylene from U.S. producers turn to producers in the rest of the world, bidding up the foreign price of polypropylene as well. This leads to an increase in the demand for U.S. polypropylene, exacerbating the price rise caused by the initial cost increase but slightly mitigating the reduction in U.S. domestic production.

In the market for U.S. imports, domestic producers of plastic products buy polypropylene from foreign sellers. Increases in the CERCLA tax rates raise the demand for imported polypropylene because it is not taxed either directly or indirectly. This raises the price of the imported polypropylene and increases its volume. The foreign suppliers of polypropylene need more propylene to produce their expanded output and, in buying it, bid up the world price of propylene. The resulting increase in the cost of propylene, in turn, raises the cost of foreign polypropylene, exacerbating the import price increase caused by the initial increase in demand but slightly mitigating the increase in U.S. imports.

These equilibrium effects are embedded in the petrochemical trade model, which takes into account the multiple feedbacks that affect production and trade in petrochemicals. The model measures the extent of these effects, based on 1982 data, on the cost of petrochemicals production in the United States and abroad, the degree of substitutability between these and alternative products, and the explicit consideration of the transportation and tariff costs involved in world trade in petrochemicals.

The model has been run using two cases. The first case shows how increases in the tax on propylene affect trade in polypropylene, its largest derivative. The second case shows how increases in the tax on benzene affect trade in benzene and in styrene, its largest derivative. After discussing the results of the two cases, we examine corroborating evidence from a study of ethylene and its derivatives performed by SRI International. Propylene, benzene, and ethylene are the three primary petrochemicals with the highest sales value; together they accounted for 41% of primary petrochemical sales by U.S. manufacturers in 1982.[4]

Each case of the petrochemical trade model has two products--one primary and the other derivative--and two sectors--the United States and the rest of the world. In

each sector and for each product, cost and demand information have been developed. Also, trade in each of the derivative petrochemicals--polypropylene and styrene--was modeled, as was trade in benzene. Propylene is extremely volatile, and hence expensive to transport, so there is little world trade in propylene. The propylene/polypropylene case of the petrochemical trade model does not allow trade in propylene. Detailed descriptions of the model, data sources, and results are provided in Appendix C.

The model uses the current $4.87 per ton tax on petrochemicals as a reference point. We considered three levels of new tax rates to show the range of effects from current and potential future Superfund bills: the tax rates proposed by H.R. 5640, five times the current CERCLA rate, and ten times the current CERCLA rate.

The tenfold increase should be considered an upper bound rather than a likely case. As discussed in Chapter II (Exhibit 4), the tax rate changes proposed in H.R. 5640 range from a reduction (for methane) to an eightfold increase (for potassium dichromate). For the petrochemicals used in the trade analysis, the tax rates roughly triple. However, H.R. 5640 depends on taxing chemicals in gasoline for a large share of revenues; if that tax provision is eliminated, the taxes on primary petrochemicals may have to be raised to the range of five- or tenfold increases.

Results of Propylene Case

The results of the petrochemical trade model for propylene and polypropylene are given in Exhibit 15 and shown graphically for polypropylene in Exhibit 16. For each level of tax increase, the model gives the impact on U.S. production and trade in propylene and polypropylene:

- U.S. exports of polypropylene fall between 6% and 29%.
- U.S. imports of polypropylene from the rest of the world increase between four and twenty-two times.
- U.S. production of both propylene and polypropylene falls between 2% and 11%.

EXHIBIT 15

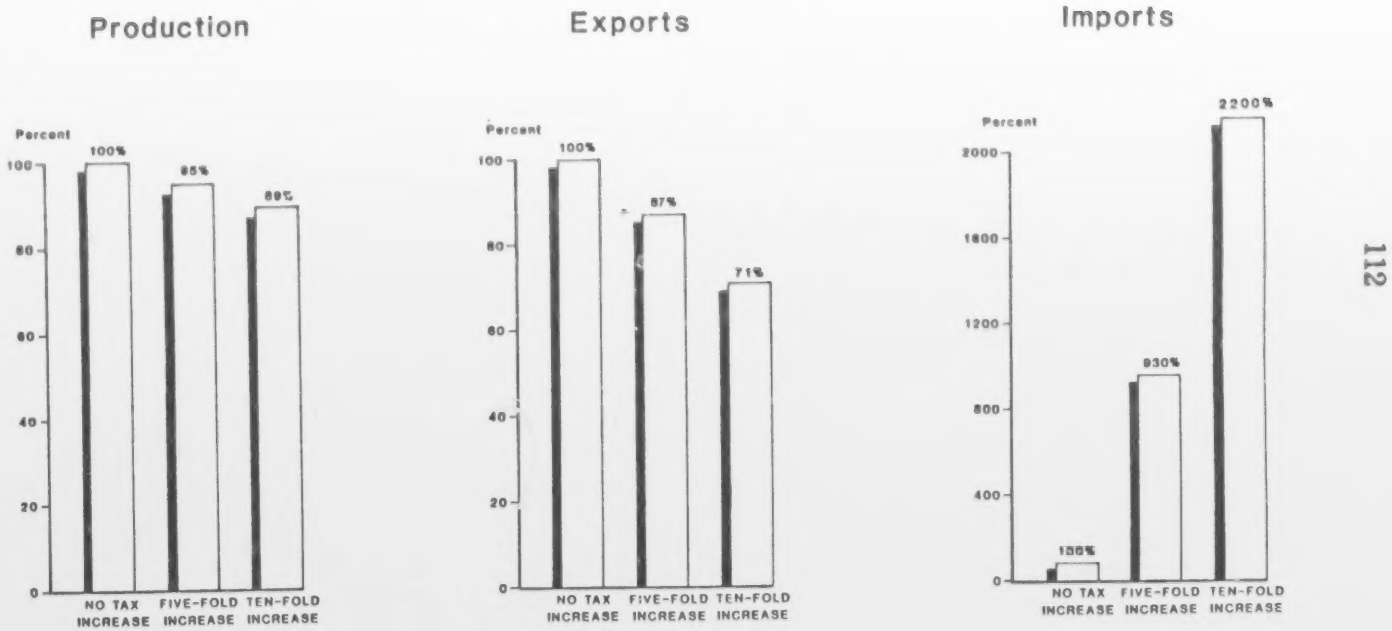
RESULTS OF THE PETROCHEMICAL TRADE MODEL FOR PROPYLENE AND POLYPROPYLENE

	No Tax Increase (Tax of $4.87)	H.R. 5640 Tax Rate ($13.82)	Five Times Current Tax Rate ($24.35)	Ten Times Current Tax Rate ($48.70)
Propylene				
Production	5,800	5,700	5,500	5,100
% Change		-2%	-5%	-11%
Polypropylene				
Production	1,600	1,500	1,500	1,400
% Change		-2%	-5%	-11%
Imports	3	15	29	65
% Change		+420%	+930%	+2,200%
Exports	370	340	320	270
% Change		-6%	-13%	-29%
Revenue Loss (Excluding CERCLA tax payments)		$ 120	$ 250	$ 550

Note: Quantities are in thousands of metric tons, and revenues are in millions of dollars/year. Results are expressed to two significant digits.

EXHIBIT 16

EFFECTS OF TAX INCREASES ON PRODUCTION AND TRADE IN POLYPROPYLENE



Production, exports and imports of polypropylene at new tax rates, as a percent of current-tax-rate levels

These quantity figures can be given dollar values:

- The revenue loss to U.S. propylene and polypropylene producers is $120 million per year at the H.R. 5640 tax rates, excluding CERCLA tax payments.

- This revenue loss rises to $550 million per year if the tax rate is increased to ten times the current amount.

In every case, the revenue loss is more than double the increase in CERCLA tax revenue.

Results of Benzene Case

The results of the petrochemical trade model for benzene and styrene are given in Exhibit 17 and shown graphically for styrene in Exhibit 18. For each level of tax increase, the model gives the response of U.S. production and trade in benzene and styrene:

- U.S. exports of benzene fall between 27% and 75%; exports of the derivative product, styrene, fall between 11% and 40%.

- U.S. imports of benzene from the rest of the world fall between 22% and 76%; imports of styrene rise between four and fifteen times.

- U.S. production of benzene drops off between 1% and 7%; production of styrene falls 4% to 14%.

- The revenue loss to U.S. benzene and styrene producers is $73 million per year at H.R. 5640 tax rates, excluding CERCLA tax payments.

- This revenue loss rises to $310 million per year if the tax rate is increased to ten times the current amount.

There are no major surprises. One result is somewhat paradoxical, however, in that U.S. imports of benzene fall when the tax is raised. This occurs because imported

EXHIBIT 17

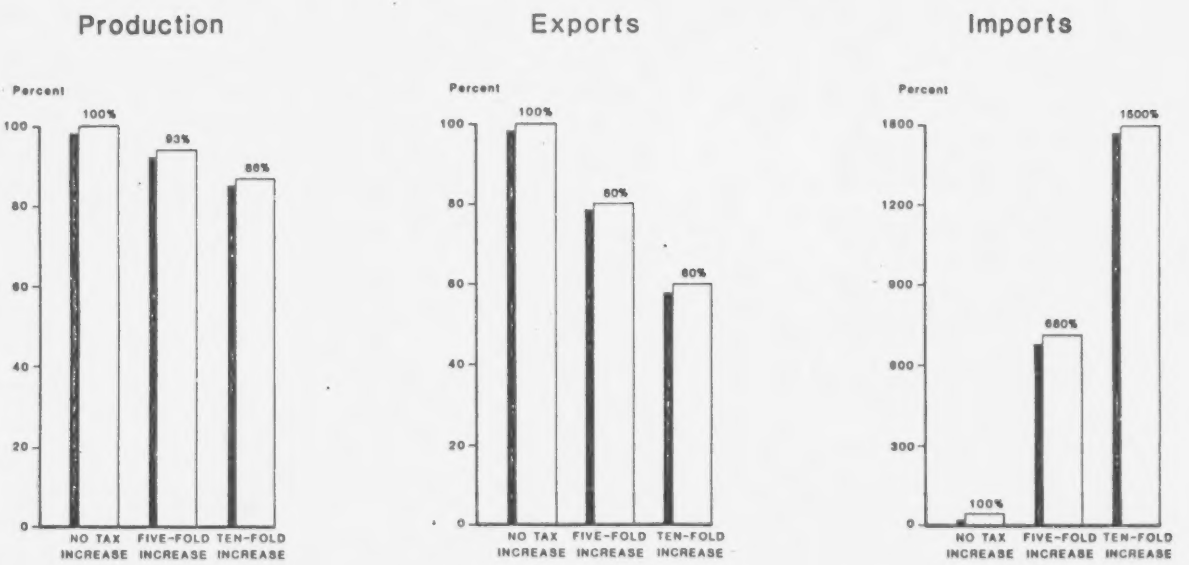
RESULTS OF THE PETROCHEMICAL TRADE MODEL FOR BENZENE AND STYRENE

	No Tax Increase (Tax of $4.87)	H.R. 5640 Tax Rate ($14.88)	Five Times Current Tax Rate ($24.35)	Ten Times Current Tax Rate ($48.70)
Benzene				
Production	3,600	3,500	3,500	3,300
% Change		-1%	-3%	-7%
Imports	450	350	270	110
% Change		-22%	-40%	-76%
Exports	28	20	15	6
% Change		-27%	-46%	-75%
Styrene				
Production	2,900	2,800	2,700	2,500
% Change		-4%	-7%	-14%
Imports	12	54	93	200
% Change		+350%	+680%	+1,500%
Exports	470	410	370	280
% Change		-11%	-20%	-40%
Revenue Loss (Excluding CERCLA tax payments)		$ 73	$ 140	$ 310

Note: Quantities are in thousands of metric tons, and revenues are in millions of dollars/year. Results are expressed to two significant digits.

EXHIBIT 18

EFFECTS OF TAX INCREASES ON PRODUCTION AND TRADE IN STYRENE



Production, exports and imports of styrene at new tax rates, as a percent of current-tax-rate levels.

benzene carries a tax-equalizing tariff at the same effective rate as the CERCLA tax. Foreign benzene producers find it worthwhile to keep their benzene at home, produce styrene with it themselves, and export the styrene, which is not taxed, into the United States. U.S. production is lost through this effective subsidy of foreign styrene manufacture.

Evidence from the SRI International Study

SRI International has recently analyzed proposed taxes on energy, proceeding independently and using an independent data base. The SRI analysis includes an assessment of changes in the competitive position of the U.S. chemical industry both within the United States and in the export markets. In making their assessment, SRI focused on the major derivative products of ethylene. This complements our petrochemical trade model, which focuses on the derivatives of propylene and benzene.

The SRI study compares five levels of tax on crude oil and natural gas to the current no-tax situation. These taxes on the raw material for producing ethylene are partially passed through in the costs of using ethylene.

On average, the $6 per barrel tax on crude oil raises the cost of producing ethylene about 4 cents per pound, or $80 per ton.[5] On this basis:

- A $1.30 per barrel tax on crude oil has approximately the same effects on the cost of ethylene production as the H.R. 5640 tax rate on ethylene.
- A $1.80 per barrel tax on crude oil has approximately the same effects on the cost of ethylene production as a fivefold increase in the CERCLA tax on ethylene.
- A $3.60 per barrel tax on crude oil has approximately the same effects on the cost of ethylene production as a tenfold increase in the CERCLA tax on ethylene.

By interpolating the results obtained by SRI, we can estimate the likely effects of increases in the CERCLA tax rates on ethylene derivatives. Exhibit 19 shows these results for four of the derivatives--low-density polyethylene, high-density polyethylene, ethylene glycol, and ethylene dichloride--and compares them to the results of the petrochemical trade model for polypropylene and styrene.

The export response to increases in the cost of the petrochemical input varies from derivative to derivative, depending both on the availability of substitute products and alternative sources, and on the quantity of ethylene used in producing the derivative. Thus, the effects of the tenfold tax increase are as low as a 14% reduction in U.S. exports of low-density polyethylene, and as high as a 50% reduction in exports of ethylene dichloride.

The effects estimated using the SRI data are consistent with the results of the MAC petrochemical trade model. In the MAC petrochemical trade model, the percentage reductions in exports of polypropylene were one-half to two-thirds the percentage reductions in exports of styrene. Low-density polyethylene and ethylene glycol exports are less responsive to tax increases than polypropylene exports, while ethylene dichloride exports are more responsive than styrene exports.

These results thus lend weight to the results of the MAC petrochemical trade model. Raising the CERCLA taxes to the H.R. 5640 levels reduces U.S. exports of petrochemical derivatives by 4% to 18%; raising the taxes tenfold reduces U.S. exports by 14% to 50%.

Overview of Impacts on Petrochemical Trade

The original intent of Congress was that CERCLA taxes not exceed 2% of prices; proposals now before Congress would raise the CERCLA taxes beyond that threshold. If the currently proposed IRS regulation that taxes chemical additives in gasoline is not adopted, the taxes on primary petrochemicals may have to be raised five- to tenfold in order to meet H.R. 5640 revenue targets. The petrochemical trade model shows that a five- or tenfold increase in CERCLA taxes would cause major reductions in U.S. production and do significant damage to our trade position in petrochemicals.

EXHIBIT 19

EXPORT LOSS IN PETROCHEMICAL DERIVATIVES BECAUSE OF TAX INCREASES

	Interpolated SRI International Results				Petrochemical Trade Model Results	
	Low-density Polyethylene	High-density Polyethylene	Ethylene Glycol	Ethylene Dichloride	Polypropylene	Styrene
H.R. 5640 Tax Rate	-4%	-18%	-7%	-17%	-6%	-11%
Fivefold Increase	-5%	-25%	-10%	-23%	-13%	-20%
Tenfold Increase	-14%	-30%	-22%	-50%	-29%	-40%

Taxes at these rates undermine an industry that is now vigorous and competitive in world markets. At the fivefold increase level, U.S. exports of petrochemical derivative products fall 10% to 25%, and U.S. imports increase seven to ten times.

These are only near-term results. The petrochemical trade model uses capacity in place in 1982, and SRI used forecast capacity in place in 1987. The results of this analysis apply to a period two to five years out. Over longer periods, the effects may be even more dramatic.

Producers in the United States and Western Europe have access to the same production technologies; in fact, they are often the same companies. Construction costs are similar for petrochemical plants in most parts of the developed world; and the U.S. decontrol of crude oil prices and partial decontrol of natural gas have brought raw materials costs in the United States more in line with those abroad. As a result, the minimum average cost of production of petrochemicals from new plants in the United States and abroad is very close--some analysts believe as close as one cent per pound. In this context, taxes of $15 per ton, or 0.8 cents per pound, absorb most of the competitive margin. As plant replacement and technological innovation make new petrochemical capacity economically attractive, CERCLA taxes could well tip the decision to build new capacity outside our borders.

We believe that the results of the above analysis should give pause to those who would use feedstock taxes as the primary vehicle for raising Superfund revenues. In a period of trade deficits of $100 billion or more, the nation is not well served by a heavy export tax or import subsidy on one of its most competitive industries.

TAX INCIDENCE MODEL

The trade model indicates that the CERCLA chemical feedstocks taxes have great potential for serious economic dislocations. Some might claim, however, that the CERCLA feedstocks tax is useful as an externality tax. We suspect that it is not. In fact, it passes through to all derivatives, failing to discriminate between hazardous and nonhazardous petrochemical products. As a result, it fails as an externality tax. Petrochemicals are used to make aspirin and pantyhose as well as caustic and poisonous substances, and the petrochemical feedstocks tax is partially passed through in the price of all of these products.

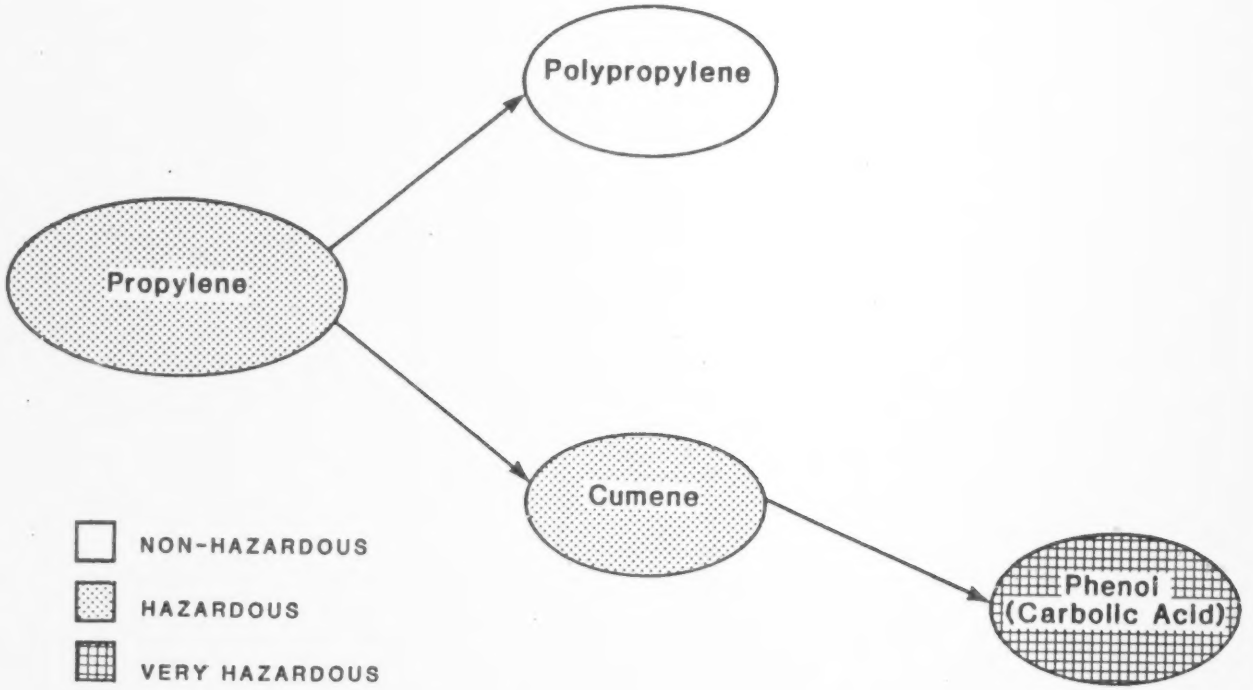
To analyze the magnitude of such effects, we have developed a microeconomic model of the production of petrochemical products. The tax incidence model is not meant to be a predictive model, but an incidence model. It is intended to illustrate the economic principle that externality taxes should be levied close to the market that generates the external costs and to consider the distortion that occurs when the tax is inappropriately levied.

This model compares taxing a primary petrochemical with taxing a hazardous downstream product. The tax on the hazardous product raises the cost of the hazardous product more than the tax on the primary petrochemical does. The hazardous product tax has little effect on the markets for nonhazardous downstream products, whereas the primary petrochemical tax falls as heavily on the nonhazardous products as the hazardous.

The model shows the relationships among four petrochemicals: propylene, polypropylene, cumene, and phenol. Exhibit 20 diagrams the production relationships. Propylene is produced principally as a byproduct of refining crude oil and cracking ethylene. In 1982, 29% of U.S. production of propylene was used to make polypropylene, and 23% of U.S. polypropylene produced was exported. Polypropylene is made into fibers and into sheet and film plastic, which can be rolled or stamped; it can also be blown into many different shapes. The demand for polypropylene is affected by its substitutes: other petrochemicals—styrene and high-density polyethylene, for example—and wood, paper, and metal products. Polypropylene is not hazardous; it is found in such everyday household items as food containers.

Another 8% of U.S. propylene was used in 1982 to make cumene, an industrial intermediate product, 97% of which is used in the production of phenol. Phenol is used principally in construction materials; for instance, it is the "glue" for plywood. Phenol is carbolic acid; it is extremely hazardous, and special precautions must be taken to avoid skin contact.

EXHIBIT 20
PROPYLENE-PHENOL PRODUCTION CHAIN



The incidence model shows the economic effects of a feedstocks tax, levied on the feedstock propylene, compared with a true externality tax, levied on hazardous phenol, the downstream product. Each of the four markets consists of two equations: a supply equation that specifies how sellers behave, and a demand equation that specifies how buyers behave. The markets are interrelated, because some of the buyers in each market are the sellers in the succeeding market. Although international trade in petrochemicals has not been explicitly included in the tax incidence model, the equations have been calibrated with the petrochemical trade model to incorporate the trade effects. Exhibit 21 lists the equations of supply and demand in the model. A detailed description of the sources of data and the methodologies for the tax incidence model is given in Appendix C.

The tax incidence model uses the existing $4.87 per ton tax on propylene as a starting point and compares the effects on the markets for the four petrochemicals of increasing the CERCLA tax on propylene to the effects of adding a tax on phenol. To show the range of possible effects, three levels of each tax are considered. The three levels of the propylene tax are the same three examined in the petrochemical trade model: the tax rates proposed by H.R. 5640, five times the current CERCLA rate, and ten times the current CERCLA rate.

Two of the three levels of the phenol tax have been chosen because they raise the same revenue as the propylene tax increases. However, it is not possible to raise as much tax revenue by imposing a tax on phenol as by raising the current CERCLA propylene tax rate tenfold. This is because buyers respond to increases in the cost of phenol by withdrawing from the U.S. phenol market to alternative products, or alternative suppliers. The tax rate on phenol that raises the maximum tax is the third phenol tax level considered. In each case, a tariff at the same effective rate has been placed on imports.

Effects of the Taxes

Exhibit 22 records the effects of these taxes on the four markets; Exhibit 23 compares the results of raising the CERCLA tax on propylene fivefold to raising the same tax revenue by a phenol tax.

EXHIBIT 21

SUPPLY AND DEMAND EQUATIONS IN THE TAX INCIDENCE MODEL

Propylene Market

- Demand: $QPR^d = 2.84\ QPL + 1.07\ QC$
- Supply: $QPR^s = 27.52\ PPR - 7,805$

Polypropylene Market

- Demand: $QPL^d = 8,281 - 8.35\ PPL$
- Supply: $QPL^s = 19.61\ PPL - 21.23\ PPR - 3,680$

Cumene Market

- Demand: $QC^d = 1.40\ QPH$
- Supply: $QC^s = 46.51\ PC - 18.6\ PPR - 2,153$

Phenol Market

- Demand: $QPH^d = 2,103 - 1.98\ PPH$
- Supply: $QPH^s = 27.03\ PPH - 12.97\ PPR - 8,114$

Balancing Equations

- For each of the separate markets the calculations assume that the quantity supplied equals the quantity demanded (e.g. $QPR^s = QPR^d$).

Note: The quantities of propylene (QPR), polypropylene (QPL), cumene (QC), and phenol (QPH) are in thousands of metric tons/year. The prices of propylene (PPR), polypropylene (PPL), cumene (PC), and phenol (PPH) are in dollars/metric ton.

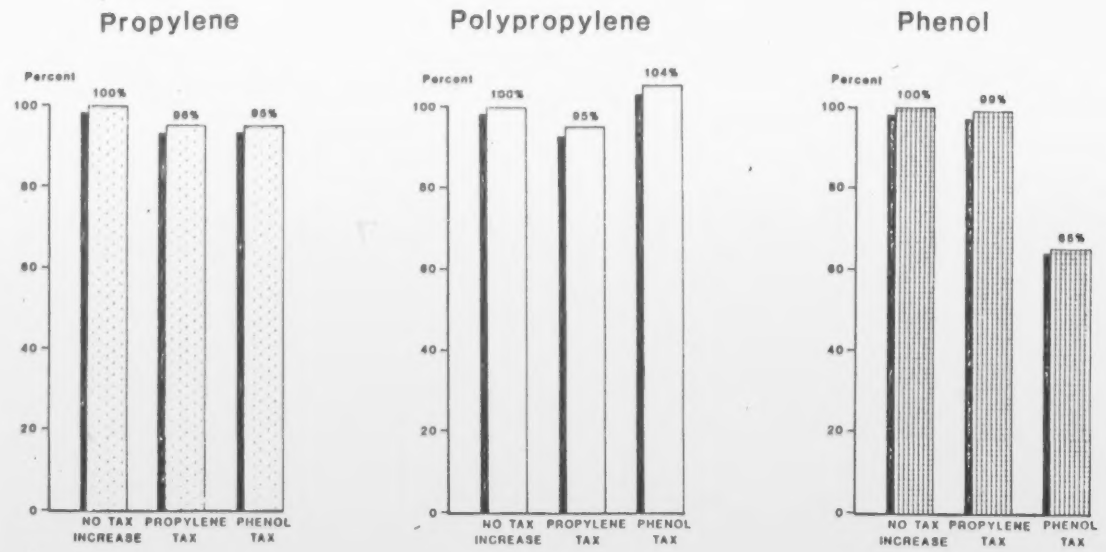
EXHIBIT 22

RESULTS OF THE TAX INCIDENCE MODEL

	No Tax Increase	H.R. 5640 Propylene Tax	Equivalent Phenol Tax	Five Times Current Propylene Tax	Equivalent Phenol Tax	Ten Times Current Propylene Tax	Maximum Revenue Phenol Tax
	($4.87)	($13.82)	($59.00)	($24.35)	($172.00)	($48.70)	($243.00)
Propylene							
Production	5,800	5,700	5,700	5,500	5,500	5,200	5,400
% Change		-2%	-2%	-4%	-5%	-9%	-7%
Polypropylene							
Production	1,600	1,500	1,600	1,500	1,600	1,400	1,700
% Change		-2%	+1%	-5%	+4%	-11%	+6%
Cumene							
Production	1,200	1,200	1,100	1,200	800	1,200	600
% change		-0.5%	-12%	-1%	-35%	-3%	-50%
Phenol							
Production	1,000	1,000	900	1,000	600	900	500
% Change		-0.5%	-12%	-1%	-35%	-3%	-50%
Tax Revenue	$ 31	$ 86	$ 86	$ 150	$ 150	$ 280	$ 160

Note: Quantities are in thousands of metric tons, tax rates are in dollars/English ton, and revenues are in millions of dollars/year. Results are expressed to two significant digits.

EXHIBIT 23
COMPARISON OF PROPYLENE TAX WITH PHENOL TAX



Effects on production of propylene, polypropylene and phenol of a five-fold increase in the CERCLA tax on propylene compared to the effects of levying a tax on phenol that raises the same tax revenue.

Increasing the propylene tax reduces the production of propylene by about the same percentage as a phenol tax that raises the same revenue. But there is a dramatic difference in the effects on downstream products:

- The phenol tax reduces the production of the hazardous substance phenol between 12% and 50%, while the propylene tax reduces phenol only between 0.5% and 3%.

- The propylene tax reduces the production of the nonhazardous derivative polypropylene between 2% and 11%, while the phenol tax actually raises production between 1% and 6%.

The phenol tax raises the production of polypropylene because it reduces the demand for the propylene input, reducing its price. Since propylene is the principal input into the production of polypropylene, this encourages increased output of polypropylene. This illustrates that by taxing the hazardous substance we not only reduce its use but also encourage use of nonhazardous substances. This effect does not occur with feedstock taxes.

The phenol tax is markedly more effective as an externality tax than the propylene tax. For the same revenue raised, it has fifteen to thirty-five times greater success reducing production of hazardous products. The effects of the petrochemical feedstock taxes are too scattered, distorting the choices among nonhazardous products, while failing to make a significant dent in the production of hazardous materials.

SUMMARY OF ECONOMIC ANALYSES

This chapter analyzed the economic effects of feedstock taxes. Because they are intermediate product taxes, feedstock taxes have great potential for serious economic distortions. We analyzed the distortions in U.S. exports and imports that would result from increases in the CERCLA tax rates at three levels: the tax rates proposed by H.R. 5640, five times the current CERCLA rate, and ten times the current CERCLA rate.

We also analyzed the incidence of feedstock taxes on downstream products for

these three tax rates, comparing them to taxes on hazardous products.

The CERCLA taxes are effectively taxes on U.S. exports and subsidies of imports into the United States. The petrochemical trade model shows that increasing the CERCLA tax rates fivefold leads to a significant increase in imports and decrease in exports.

Effects of Taxes on U.S. Foreign Trade

	Exports	Imports
Polypropylene	-13%	+930%
Benzene	-46%	-40%
Styrene	-20%	+680%

These effects are not limited to the chemicals we investigated; evidence from an independent study by SRI International shows export losses of similar magnitudes on ethylene derivatives.

Furthermore, the CERCLA taxes are not effective externality taxes. The tax incidence model found that increasing the CERCLA tax rates fivefold reduces the production of nonhazardous polypropylene more than it reduces the production of hazardous phenol. An equivalent phenol tax actually increases polypropylene production.

Effects of Taxes on Production

	Propylene Tax	Phenol Tax
Propylene	-4%	-5%
Polypropylene	-5%	+4%
Phenol	-1%	-35%

The effects of the propylene tax are too scattered to impose effective control on the production of hazardous substances and hazardous waste. If they are to be effective, externality taxes must be levied close to the market that generates the external costs.

REFERENCES FOR CHAPTER IV

1 Highlights of United States Export and Import Trade, FT 990, December 1979, 1982.

2 Highlights, op. cit.

3 Communication from Edwino S. Dizon, Planning Analyst at ARCO Chemical Company.

4 Synthetic Organic Chemicals: United States Production and Sales: 1982, USITC Publication 1422, Table II.1.

5 MAC estimates based on conversation with Les Carmichael, SRI International.

APPENDIX C

"TRACEBACK" OF FEEDSTOCKS

DETERMINING THE RELATIVE CONTRIBUTION OF FEEDSTOCKS TO THE MANUFACTURE OF SUBSTANCES FOUND AT HAZARD RANKING SYSTEM (HRS) SCORED SITES

GENERAL

- In order to determine a feedstock's contribution to the problem at a particular hazardous waste site, one must "traceback" from the chemicals found at the site to their feedstocks. Doing this for all sites would provide an overall indication of a feedstock's contribution.

- The "traceback" involves determining the relative contribution of feedstocks (and raw materials) to the production of substances found at HRS sites. To the extent possible, the substances were traced back to feedstocks currently taxed under CERCLA; where this would not account for some of the feedstocks of a substance, additional feedstocks were included.

- In order to determine the relative contribution of feedstocks, data from actual production process should be used. Reaction yields are rarely 100 percent of theoretical yields; therefore, mass balance data (weight of feedstocks per unit of product) are needed. Because a substance may be produced by a variety of processes, the percent contribution of each process to total production is needed.

- The relative contribution of feedstocks can be calculated in the following manner:

  (1) For each process, list the feedstocks and the tons of feedstock required per ton of product;

  (2) For each process, multiply these mass balance data by the relative contribution of that process;

  (3) For each feedstock, add the resulting values for each process (some feedstocks may not appear in all processes); and

  (4) Calculate the percent contribution of each feedstock.

- In many cases, the reactants for a process are not taxed CERCLA feedstocks but are derived from them, and the processes that produce the reactants must also be evaluated. The goal is to express the production of a substance in terms of CERCLA-taxed feedstocks and other feedstocks that are not derived from taxed feedstocks.

- Because of the data collection and calculations required, the above process is time consuming. In order to minimize the time required to evaluate the over 450 substances found at HRS sites, only the 44 most frequently found substances (found more than 20 times) were evaluated according to the procedure outlined above. For the remainder of the substances, the production processes were not investigated; the feedstocks were determined from more general sources (e.g., SRI Chemical Origins and Markets). Equal relative shares were assigned to each of the feedstocks.

- In some cases, this simplification may lead to significantly different relative shares than would be obtained from a detailed analysis; the identity of the feedstocks, however, is relatively consistent. The error is minimized, however, by evaluating the most frequently found substances in detail; evaluating mare substances would provide smaller increases in accuracy. The 44 chemicals evaluated in detail account for 71 percent of the 4,950 observations of chemicals at HRS sites. Evaluating another 22 chemicals would raise this to 78 percent; evaluating 44 more chemicals would raise this to 83 percent.

- Even detailed evaluations are subject to uncertainties. Relative shares of feedstocks may vary over time as economic conditions that favor one process over another change. Data used were the most recent available from SRI's Chemical Economics Handbook, generally 1978 to 1981.

ASSUMPTIONS

- In many reactions involving chlorination, hydrolchloric acid (HCl) is produced as a byproduct. HCl is also often used as a chlorine source. If the chlorine in the HCl byproduct is attributed to the production of the principal product, that HCl would be counted twice if the HCl was used as a chlorine source. Therefore, the quantity of chlorine used in a reaction that forms HCl is not counted against the main product. However, wastes which are generally not recovered and recycled (e.g., sodium chloride) are included when assessing the feedstock's share. This is a judgement decision, and generally only affects reactions producing HCl.

- Oxygen is not considered a feedstock since it is readily available from the air.

- For listings in the HRS data base that are generic (e.g., heavy metals, not otherwise specified), the assesment of the feedstocks is as detailed as possible. For example, heavy metals, N.O.S. is not traced back to any specific feedstocks; trichloroethenes, N.O.S. is traced back to the feedstocks of specific trichloroethenes on the HRS list.

- Where data are not available, some assumptions must be made (e.g., plant capacity data must often be used as a proxy for production data).

- If no specific production or capacity data are available, one process is chosen if the data indicate that it is clearly dominant; equal shares are assumed if no data are available.

SOURCES

The data used to perfom these calculations are from:

- Hawley, Gessner G., ed. The Condensed Chemical Dictionary 8th ed. New York: Van Nostrand Reinhold Company, 1971

  -- General information
  -- Process information

- Lawler, Gloria M., ed. Chemical Origins and Markets 4th ed. Menlo Park: Chemical Information Services, Stanford Research Institute, 1977

  -- Process flow diagrams

- Rudd, Fathi-Afshar, Trevino, and Stadtherr. Petrochemical Technology Assessment. New York: John Wiley & Sons, 1981

  -- Mass balance data
  -- Process information

- Stanford Research Institute. Chemical Economics Handbook. Menlo Park.

  -- Process information
  -- Production and capacity data

FREQUENCY OF FEEDSTOCK AT HRS SITES

(A) Feedstock	(B) Feedstock Score	(C) Relative Revenue Share As Indicated by HRS Data
*Chlorine	209.95	25.07
*Benzene	112.03	13.38
Lead	55.23	6.59
Other	54.98	6.57
*Toluene	37.66	4.50
*Chromium	35.89	4.29
*Ethylene	35.20	4.20
Coal Tar	28.41	3.39
*Arsenic	26.49	3.16
*Methane	22.31	2.66
*Crude Oil	20.44	2.44
*Cadmium	19.90	2.38
*Xylene	18.04	2.15
*Mercury	17.96	2.14
*Propylene	17.33	2.07
*Sulfuric Acid	12.08	1.44
*Ammonia	10.64	1.27
**Zinc	9.56	1.14
*Sodium Hydroxide	8.32	0.99
Asbestos	7.34	0.88
*Hydrochloric Acid	6.58	0.79
*Naphthalene	6.37	0.76
*Acetylene	6.25	0.75
Uranium Oxide	5.98	0.72
**Copper	5.66	0.67
*Butylene	4.73	0.57
Barium	4.08	0.49
*Butane	3.58	0.43
*Nitric Acid	3.53	0.42
Selenium	3.19	0.38
*Nickel	2.99	0.36
*Bromine	2.90	0.35
*Phosphoric Acid	2.84	0.34
Iron	2.74	0.33
*Hydrogen Fluoride	2.46	0.29
Manganese	1.72	0.21
Calcium Oxide	1.41	0.17
Vanadium	1.31	0.16
Sulfur	1.26	0.15

FREQUENCY OF FEEDSTOCK AT HRS SITES (CONTINUED)

(A) Feedstock	(B) Feedstock Score	(C) Relative Revenue Share As Indicated by HRS Data
*Phosphorus	1.20	0.14
Aluminum	1.19	0.14
Coal Coke	0.79	0.09
Boron Trioxide	0.76	0.09
*Chromite	0.76	0.09
Coal Light Oil	0.76	0.09
*Butadiene	0.69	0.08
*Barium Sulfide	0.56	0.07
*Antimony	0.47	0.06
*Cobalt	0.39	0.05
*Potassium Hydroxide	0.28	0.03
*Potassium Dichromate	0.14	0.02
*Sodium Dichromate	0.13	0.02
*Lithium Carbonate	0.07	0.01

* - Taxed feedstock.

** - Some derivates of both zinc and copper are taxed. Neither is taxed in elemental form.

APPENDIX D

FREQUENCY OF OCCURRENCE OF ELEVEN COMPOUNDS AND THEIR DERIVATIVES AT CERCLA WASTE SITES

This paper presents the results of a brief analysis on the frequency of occurrence of eleven specific compounds and their derivatives at hazardous waste sites likely to be remedied under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The compounds are:

- vinyl acetate monomer
- ethylene propylene rubber
- propylene oxide
- alkylbenzene
- nitrobenzene
- maleic anhydride
- styrene butadiene rubber
- polybutadiene
- nitrile rubber
- neoprene rubber
- styrene butadiene latexes

One of these compounds, alkylbenzene, was treated differently from the others in this analysis. Alkylbenzene is not a single chemical compound; rather it is a class of compounds. For purposes of this analysis, alkylbenzene is assumed to be represented by four of the most common members of this class of compound: ethylbenzene, cumene, toluene, and styrene.

The methodology for determining the frequency of occurrence of the eleven compounds proceeded in two steps. First, derivatives of the eleven compounds were identified using Chemical Origins and Markets. Second, the compounds and their derivatives were compared to the list of substances found at CERCLA waste sites. For purposes of this analysis, data from the Hazard Ranking System (HRS), used to establish rankings for the National Priorities List, served as the basis for substances found at HRS ranked sites.

Exhibit 1 presents the results of the analysis. Of the eleven compounds of interest, eight were not found at HRS ranked sites. Derivatives of two of the compounds, propylene oxide and maleic anhydride, were found at one site each. A number of the eleven compounds are final chemical products which are fabricated into manufactured products, i.e., the rubbers. These compounds were not found at sites; since they have no derivatives as such, no derivatives for these compounds could be found at sites.

Five of the compounds are sometimes called by more than one name. To ensure that estimates of frequency of occurrence were not inaccurate due to nomenclature problems, the HRS data base was also screened for alternative names for the compounds and their derivatives. Exhibit 2 presents alternate names sometimes used for five of the compounds and their derivatives.

EXHIBIT 1

FREQUENCY OF OCCURRENCE OF ELEVEN COMPOUNDS
AND THEIR DERIVATIVES AT HRS RANKED WASTE SITES

Compound/Derivative Name	No. of Sites
Vinyl acetate Monomer	0
derivatives	
Polyvinyl alcohol	1
Ethylene Propylene Rubber	0
Propylene Oxide	0
derivatives	
Propylene glycol	
glycols, mixed	1
Dipropylene glycol	
Alkylbenzenes	2
a) ethylbenzene	101
derivatives	
styrene	13
acetophenone	1
b) cumene	2
derivatives	
phenol	125
phenolic compounds	5
cyclohexanone	1
alkyl phenols (other than nonylphenol and dodecylphenol); dimethyl ethyl phenol	1
diacetone alcohol	1
chlorophenol: 2-chlorophenol	6
2,4-dichlorophenoxy acetic acid	3
pentachlorophenol (PCP)	43
acetone	22
acetophenone	1
isophorene	6
acetic anhydride	1

EXHIBIT 1
(continued)

FREQUENCY OF OCCURRENCE OF ELEVEN COMPOUNDS
AND THEIR DERIVATIVES AT HRS RANKED WASTE SITES

Compound/Derivative Name	No. of Sites
c) toluene*	234
derivatives	
nitrotoluenes: 4-nitrotoluene	2
dinitrotoluenes: 2,4-dinitrotoluene	3
benzyl chloride	1
xylenes	115
phenol	125
d) styrene (toluene derivs.)	13
p-cresol: cresols	13
p-chloro-m-cresol	3
Nitrobenzene	3
derivatives	
aniline	4
benzidine	3
hydroquinone	1
p-chloroaniline: chloroaniline	2
p-nitroaniline: nitroaniline	2
Maleic Anhydride	0
derivatives	
malathion	1
Styrene Butadiene Rubber	0
Polybutadiene	0
Nitrile Rubber	0
Neoprene	0
Styrene Butadiene Latexes	0

* It is assumed that although benzene can be a derivative of toluene, this is not a major source of benzene.

Source: HRS Data Base (September 7, 1983 computer printout).

EXHIBIT 2

OTHER NAMES FOR PRODUCTS LISTED

Vinyl acetate monomer	acetic acid ethenylester, acetic acid vinyl ester
Propylene oxide	methyloxirane, propene oxide
Alkylbenzenes	
Ethylbenzene	phenyl ethane
Cumene	1-methylethyl benzene, cumol, isopropyl benzene
Toluene	methylbenzene, toluol, phenyl-methane, methacide
Styrene	ethenyl benzene, styrol, styrolene, cinnamene, cinncumol, vinyl benzene, phenyl ethylene
Nitrobenzene	nitrobenzol, essence of mirbane, oil of mirbane
Maleic anhydride	2,5-furandion, cis-butanedioic anhydride, toxilic anhydride.

Source: The Merck Index.

Because a number of the eleven compounds are chemical intermediates or final products, it is possible that the feedstocks and intermediates used to produce them may occur at waste sites. Because of the short time frame available for the analysis, no attempt was made to identify precursors of the eleven compounds or their frequency of occurrence at CERCLA waste sites. This information could be of critical importance in evaluating the impact of the eleven compounds of interest on CERCLA implementation.

REFERENCES

Lawler, Gloria M. ed. Chemical Origins and Markets, 4th ed. Menlo Park: Chemical Information Services, Stanford Research Institute 1977.

Hopp, Vollrath and Hennig, Ingo. Handbook of Applied Chemistry Hemisphere Publishing Corporation, 1983.

Windholz, Martha, ed. The Merck Index, 10th ed. Rahway, N.J.: Merck & Co., Inc., 1983.

APPENDIX E

SUMMARY OF STATE WASTE-END TAXES

This paper presents a brief analysis of state waste-end taxes. For all 50 states, research was done to determine the following:

- which states had legislation empowering them to collect some form of waste-end tax,
- what types of taxes are collected and at what rates,
- the purpose for which the tax revenue is used, and any special features particular to a state.

Information was gathered from a variety of documents and reports done by or for EPA, by state surveys, or by ICF. The reports date from 1982 up to August of 1984.

While many states have a variety of fees and tax systems, several states had instituted new taxes or new tax rates recently, and many states have changed their taxes within the last year. Where there were discrepancies resulting from this, data was used from the most current source. Where no recent information existed for a state, May 1984 to present, data was utilized from the 1982 or 1983 reports. A total of eight sources were used and they are as follows:

-- Hazardous Waste, Comptroller of Public Accounts, State Survey, May 1984

-- ASTSWMO State Survey Part I, ICF, Inc. May 1984

-- State Experiences with Taxes on Generators or Disposers of Hazardous Waste, U.S. General Accounting Office, RCED-84-146, May 4, 1984

-- Hazardous Waste Funds, National Council of State Governments, May 1984

-- Briefing Book: Preliminary Analysis of Waste-End Taxes, U.S. EPA, ICF, Inc., Washington, D.C., Sept. 1983

-- A Study of State Fee Systems for Hazardous Waste Management Programs, Fred C. Hart Associates, Inc., Washington, D.C., prepared for EPA, July 1982

-- Technologies and Management Strategies for Hazardous Waste Control, Office of Technology Assessment, March 1983

-- CERCLA Funding Options, prepared for Richard Fortuna, Hazardous Waste Treatment Council, prepared by Fred Hart Associates, Washington, D.C.

The findings of this analysis are presented in Exhibit 1 and summarized in the discussion below. For several states, information was not sufficient to determine if a particular disposal or facility tax was to be levied on-site, off-site or both. Off-site facilities are defined in Exhibit 1 as including both commercial treatment, storage and disposal facilities (T,S,D) and facilities which may operate only for one or a few generators. For many states, information concerning the uses of tax revenues and actual revenue generated was either absent, vague, or in conflict with other sources of information. Where more than one source cited the same purpose for the tax or revenue generated, that information was used.

Tremendous variation exists in the types of state waste-end taxes and fees. The eight sources used, cite varying terms, used interchangeably, to define and describe these tax systems. A classification system was designed for the exhibit to synthesize disparate information and terms of definition. The three tax categories used in the exhibit are disposal tax, generation tax, and facility tax. Generation and disposal taxes are distinguished from facility taxes and fees by what the tax is levied on. Both disposal and generation taxes are levied on either the amount and type of waste being generated or treated, stored, disposed, or the volume of waste being handled by the type of management process used. In contrast, a facility tax was defined as a flat, one-time, or annual tax. This may include annual fees, operating permits, design, renewal and evaluation taxes, site licenses or application fees. These fees and taxes may vary by size of facility, type of waste handled, and process used. These taxes/fees may be levied on both treatment, storage, and disposal facilities (TSDF's), off-site commercial facilities, on-site facilities, and generators. A facility tax, although usually paid by the owner/operator of an off-site facility, may be paid by the generator or disposer of the waste.

The distinction used to classify a generation tax from a disposal tax is at what stage in the hazardous waste management process the waste is being taxed, and not who bears the liability. Therefore, a disposal tax is a tax that is levied on waste when the waste is being disposed, treated, or stored at either off-site, commercial facilities, or on-site by the volume of waste being managed. The rates for a disposal tax are usually reflected as cost per ton of waste managed. (Many states have a sliding scale of tax rates depending on variation in type and hazard of waste and method of treatment.) One-time, initial, or inspection/operating, annual or permit taxes levied on disposal facilities are counted, for the purposes of this chart, as a facility tax and not a disposal tax (tax on activity).

According to the exhibit's categorization, a disposal tax can be paid by the facility disposing (often a percentage of the costs are shifted back to the generator) or by the generator, but it is levied at the point in time when the waste will be treated/disposed, based on the amount of waste to be handled.

A generation tax is defined here as a tax on waste when it is being generated and is always paid by the generator. Information concerning transportation or hauler fees was included in the notes, but not tallied as waste-end taxes. Tipping fees were counted as surcharges levied on waste at the time of disposal, therefore categorized under disposal tax.

The following tallies summarize the authority for taxing, and the 50 states waste-end taxes and fees.

- 36 states presently have enacted legislation enpowering them to collect either disposal, generation or facility taxes. Arizona and Massachusetts both have proposed legislation for a TSD facility tax/on-site and off-site. Massachusetts, which currently has no waste-end tax, has a transporter fee. Oklahoma and Vermont have transporter and manifest fees which are very minimal. In total, 40 states have some revenue generation fee or tax, with many having several taxes. Of the 36 states, 19 have more than one type of taxes.

- 10 states have no legislation and no taxes.

- Of the 36 states which have either a disposal, generation, or facility tax, 20 have at least a disposal tax.

- Of 20 states that have a disposal tax;

  -- 6 have only a disposal tax: Alabama, Florida, Indiana, Minnesota, Mississippi, and South Carolina;

  -- 1 has disposal and generation tax: California;

  -- 10 have both a disposal and a facility tax: Colorado, Illinois, Iowa, Louisiana, Maine, New Jersey, New York, Ohio, West Virginia, and Wisconsin; and

  -- 4 have all 3 taxes, disposal, generation and facility: Kansas, Kentucky, Missouri and New York.

Of the 20 states that have disposal taxes, some states levy taxes on only off-site, only on-site, or both, often in combination with how the waste is disposed of. In several states, it is unclear.

- 14 states have disposal taxes on hazardous wastes off-site. Off-site includes commercial TSDF's and non commercial TSDF's. These states are Alabama, California, Florida, Illinois, Kansas, Kentucky, Lousiana, Maine, Mississippi, Missouri, New Jersey, New York, Ohio and South Carolina.

- Indiana, Minnesota, West Virginia, and Wisconsin have disposal taxes but data is insufficient to determine if the tax applies to off-site facilities.

Of the 29 states that have some facility tax or fee:

- 21 states have a facility tax on off-site or commercial off-site hazardous waste facilities: Arkansas, Connecticut, Delaware, Illinois, Kansas, Kentucky, Louisiana, Maine, Missouri, Montana, New Hampshire, New Jersey, New Mexico, New York, Ohio, Oregon, Pennsylvania, Tennessee, West Virginia, Wisconsin, and Washington.

The tabulations indicate that some states have both off-site disposal tax and off-site facility tax.

- 25 states have some form of off-site waste-end tax, either a facility tax (on generators or disposers) or a disposal tax. They are Alabama, Arkansas, Connecticut, California, Delaware, Florida, Illinois, Kansas, Kentucky, Louisiana, Maine, Mississippi, Missouri, Montana, New Hampshire, New York, New Jersey, New Mexico, Ohio, Oregon, Pennsylvania, Tennessee, West Virginia, Wisconsin, and Washington.

Most states use the tax revenue to fund their Superfund match, to cover administration and program costs, to respond to emergency actions and to clean up abandoned hazardous waste sites. California and New Jersey are the only two states which provide medical compensation and lost wages for hazardous waste injury victims.

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EXHIBIT 1

TYPES OF WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
ALABAMA	Yes	Yes Waste deposited in commercial landfill only: $9.00/drum $5.00/ton	No	No	85% of revenue goes to local government; 10% goes toward state share of Superfund; 5% is to administer state RCRA requirements.	Incinerated, recycled, and reused waste is not taxed.
ALASKA	No	No	No	No		
ARIZONA	No	No	No	No		Proposed for initial application fee for TSD facilities: $1,500
ARKANSAS	Yes	No	No	Yes For off-site, commercial facilities: 1) certification of operator -- $100/certificate 2) initial permit -- $5,000 (5 years) 3) renewal permit -- $15,000 (after 5 yrs.) 4) annual evaluation fee -- $5,000 For on-site, non-commercial facilities: 1) initial permit -- $1,000 2) renewal -- $1,000 (after 5 yrs.) 3) annual evaluation fee -- $1,000	To recover costs of processing permit applications, on-site monitoring, and certification of personnel	Additional charges: landfarm - commercial $1,000/acre - non-commercial $500/acre landfill - commercial $5,000/acre - non-commercial $1,000/acre storage vessel fee $1/1,000 gallons/each vessel transportation fee base $100

TYPES OF WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
CALIFORNIA	Yes	Yes Tax on operators of land disposal facilities disposing of waste on-site and off-site. Waste recycled or rendered non-hazardous is not taxed. $6.40/ton for nonrestricted waste $18/ton for restricted waste* (wastes banned from land-disposal) Assessed monthly.	Yes Tax on hazardous waste generated in and on the land. Rate set and adjusted annually to produce $10 million in revenue, using four categories: State defined hazardous waste: taxed at base rate (presently $9.29/ton). Mining Waste: taxed at one percent of base rate (presently $.09/ton). Federally exempted hazardous wastes: taxed at fifteen percent of base rate (presently $1.39/ton). Extremely hazardous wastes: taxed at two hundred percent of base rate (presently $15.5/ton).	No	Disposal Tax: To fund state's Hazardous Waste regulatory program, including inspection. Generation Tax: To fund cleanup of abandoned hazardous waste sites, administration cost and state's share of Superfund. Also used to compensate persons for medical expenses, lost wages due to injuries from exposure to hazardous waste, and remedial and removal actions.	Revenue produced: Disposal: $9.0 million in 83-84 new tax rate in effect. Generation tax revenue: • First year -- $10.0 million projected; $9.2 million actual. • Second year -- $9.4 million projected; $7.6 million actual.

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
COLORADO	Yes	Yes Waste Volume Fees • On-site: waste disposed at facility $2.00/ton; Waste treated or stored at facility $2.00/ton. • Off-site: no fee; Cap of $10,000/year.	No	Yes 1) annual operating fee - $100-$5,000 (landfill) 2) RCRA permit application $50/hour (cap $1,000-$50,000) 3) permit modification fee -- major mod. - $25 plus $50/hr. -- minor mod. - $25		Review of Certification of Designation for siting of landfills -- $150,000 cap (1/2 to board of county commission; 1/2 to state). Local government commercial landfill fee 2% gross sales, not operating. Annual revenue: $300,000.
CONNECTICUT	Yes	No	Yes $ 8.80/ton $10.00/ton $ 8.00/ton	Yes State reimbursed by owners or operators of new TSD facilities, on and off-site, for siting analysis and permit.	Generation: To raise revenue for the Superfund match emergency response and hazardous waste cleanup. Also for administrative purposes and provision of drinking water to communities whose drinking water has been contaminated.	Annual revenue: $750,000. Generators whose tax liability is $250 or less per year are exempted from the the generation tax.
DELAWARE	Yes	No	No	Yes 1) Generator • annual permit fee large generator - $500 • small generator - $100 2) TSD facility fee • large - $2,500 • small - $100		$2,500 per site ceiling
FLORIDA	Yes	Yes 1) Tax computed as percentage of the price of disposing, storing or treating hazardous waste (3% in 1983; 4% effective 10/84). 2) Tax of 3 percent of gross receipts of commercial disposal facility.	No	No	Provide match for federal Superfund; raise revenue to clean up abandoned hazardous waste sites; abate or prevent damage from hazardous wastes; maintain and monitor areas where hazardous waste has been disposed of and restore	"Front-end" tax, excise tax on certain terminal facilities. Disposal revenue: $26,000 commercial revenue: $0 (no commercial facilities presently in state). Wastes disposed of on-site are exempt.

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
FLORIDA (continued)					damaged areas. Revenue payable to local government, used to cover the local government's cost of having the facility.	
GEORGIA	No	No	No	No	N/A	N/A
HAWAII	Yes	No	No	No	To cover processing of applications.	$20 permit fee for collectors/transporters of hazardous waste.
IDAHO	No	No	No	No	N/A	N/A
ILLINOIS	Yes Tax is on commercial disposal facilities. Specific hazardous wastes are exempt from tax and, of 620 million gallons of hazardous waste generated a year, only 67 million, or 10 percent is off-site disposal and taxable.	Yes Land disposal facilities: $.03 per gallon of waste handled - $6.60/ton (cap of $10,000/yr. for on-site facilities only) Treatment facilities: $0.01 per gallon of waste handled - $2.20/ton.	No	Yes Deep-well injection: 1) $2,000 per year for facilities handling 10 million gallons 2) $5,000/yr. for 10-50 million gallons 3) $9,000/yr. over 50 million gallons.	To fund cleanup of hazardous waste sites. 75% of collected revenues used for preventive and/or corrective action at sites. 25% for research and development for land disposal alternatives.	Reuse, recycling, reclamation are not taxed. Estimate 1.5 to 2 million dollars of on-site storage is also not taxable.
INDIANA	Yes	Yes $1.50 a ton	No	No	$1.00 to state fund $.50 to local county	Transporter permit fee $90/yr. and $10 vehicle waste hauler fee to defray cost of administering waste hauler program.

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
IOWA	Yes	Yes Surcharge of 2 percent of the cost of burial for land disposal of hazardous waste in "new" facility.	No	Yes 1) state license application fee for TSD facility not to exceed $1,000 2) cost of proceedings for issuance of license paid by applicant up to $9,000.	N/A	No revenue, due to lack of "new" facilities pending licenses or in operation.
KANSAS	Yes	Yes Perpetual Care Fund for TSDF's: 1) landfill - $2.25/ton 2) other disposal - $1.45/ton. Monitoring fee (annual) - $5.00/ton.	Yes 1) $200 minimum 2) $5.00/ton (limit of $5,000 per facility).	Yes 1) $50 annual permit on all TSD facilities 2) monitoring fee - treatment $500/yr. - storage $350/yr.	To fund emergency response actions, abandoned site clean-up, site/resource reclamation.	Revenue over $230,000. Transporter fee: $1,000 a year.
KENTUCKY	Yes Tax on generators only.	Yes Off-site Disposal & Treatment 1) Long-term containment without treatment - $11.00/ton $2.50/ton 2) With treatment but still hazardous waste - $2.20/ton $1.00/ton 3) Treated to non hazardous waste - $1.10/ton $0.50/ton On-site Disposal & Treatment 1/2 rate $5.50/ton $1.25/ton $1.10/ton $ .50/ton $ .55/ton $ .25/ton	Yes Annual registration fee imposed on generators for amount of waste generated Quantity in tons / Annual Fee 13.3-100 / $200 101-300 / $300 301-500 / $400 501-or more / $500	Yes Permit Application Fee 1) Disposal facility -- $5,000 2) Treatment, incineration and storage -- $1,000	To raise revenue for hazardous waste cleanup. -- emergency hazardous substance release -- post closure maintenance and monitoring of hazardous waste disposal sites.	Tax law requires that in 1984 the tax will permanently shift from generator to disposal facilities only. Generators of "special wastes" (wastes of high volume, low hazard) are exempt from the fee, as are on-site waste disposal facilities that incinerate, detoxify, solidify, neutralize, or recycle their hazardous waste.

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
LOUISIANA	Yes	Yes 1) Tax on waste land disposed in 1981-83 - $2.00/dry wght. ton (non-incinerated non-treated), -- $0.02-$1.60/ton. 2) Tax on current and future land disposal of untreated and treated waste that remains hazardous -- $5.00/ton on property owned by generator - ($0.05-$4.00/ton). $10.00/ton on property owned by generator ($0.10-$8.00/ton). Incinerated and treated waste not taxed.	No	Yes 1) Permit application fee for TSD facilities - $250 per acre fee (max. 100 acres) - $1,000 Process and Plan Analysis - $500 per facility for facility - $1,000 management/financial analysis 2) Annual Permit Maintenance Fee - fee per site: off-site disposer commercial -- $25,000 non-commercial -- $5,000 on-site disposer -- $2,500. 3) fee per facility - $1,500 each. 4) fee on volume - $1,000-$5,000 Fees equal total of (2)&(3)&(4) Maximum fee -- off-site commercial -- $40,000 non-commercial -- $20,000 on-site -- $15,000	Facility fee tax is one of several revenues for emergency response, abandoned site clean-up, and state Superfund share.	N/A
MAINE	Yes	Yes On-site disposal: $0.12/gallon storage 90 days-180 days: $0.03/gallon storage additional 180 days: $0.03/gallon Off-site disposal: $0.15/gallon treatment: $0.09/gallon	No	Yes Facility Application Fee • disposal -- $10,000 • commercial treatment -- $7,000 • on-site treatment -- $4,000 • other -- $2,500. Annual Fee • disposal facility -- $1,500 • on-site treatment and commercial treatment -- $1,000 • other -- $500	Emergency response, state share of Superfund, equipment for emergency response.	Transporter fee: 1) impact fee on waste generated in other states 2) transporter license $100/license; $50 for additional driver, truck, facility.

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
MARYLAND	Yes	No	No	Yes Permit fee for TSD facilities $5,000-$150,000/yr. Range varies depending on service and environment effects. Fee not to exceed $1/ton hazardous waste, $50/ton of acute hazardous waste.	Recover the cost of processing applications and issuing certificates.	Annual transportation fees of: $50/truck and $20 driver.
MASSACHUSETTS	No	No	No	Yes Permit application fee.		Proposal for a facility fee on treatment, storage, disposal - $305/yr. to $9150/yr. depending on management type and site. Presently have transporter license of $100/yr. and $200/yr. vehicle registration fee.
MICHIGAN	Yes	No	No	Yes Permit fees for TSD facilities -- operating license fee on application up to $1,500 -- new facility or facility expansion fee: $500-storage $8,000-$110,000 for treatment or disposal facility.	Fees deposited in state general fund, for use to defray administrative expenses, emergency response and perpetual care.	Permit fees for licensed haulers of hazardous waste: $200/vehicle/yr. $500/business/yr/HW hauler
MINNESOTA	Yes Tax is on generators. Small quantity generators can be exempted.	Yes 1) Long-term containent without treatment: $70.40/ton $32.00/ton 2) Long-term containent after treatment $35.20/ton $16.00/ton 3) Destined for treatment in/on land $32.00/ton	No	No	To raise revenue to operate the states' hazardous waste regulatory program, emergency response and remedial action.	Revenue is $900,000.

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
MINNESOTA (continued)		4) Destined for treatment to produce non-hazardous waste $17.60/ton fully treated $8.00/ton.				
MISSISSIPPI	Yes	Yes Only waste deposited in commercial landfill: $9.00/ton $5.00/ton Tipping fee for facilities and generators. Surcharge levied on receipt of waste at facility.	No	No	N/A	No revenue; no sites in operation.
MISSOURI	Yes 4 separate taxes	Yes 1) 2% of gross receipts and fees charged from State's only commercial sales tax landfill 2) on-site - hazardous waste landfilled -- $25.00/ton 3) wastes transported off-site -- $2.00/ton 4) no tax on specified waste or recycled waste.	Yes $1.00/ton on generators producing more than 10 tons of hazardous waste a year. $2.00 per employee at hazardous waste generators.	Yes $1,000/yr. operating permit.	1) $1.00/ton tax and 2% tax for funding administrative costs of the state's hazardous waste program. 2) $25.00/ton, $2.00/ton, and $2.00/employee to raise revenue to clean-up inactive hazardous waste sites. General Fund: Cleanup of hazardous waste emergencies and cleanup of illegal and abandoned hazardous waste sites.	Estimated revenue $13,500,000 Transporter fee $100 per vehicle. $1,000/yr. per vehicle for transporter. Exempted from generation tax are generators of waste oil, small generators, and those using resource recovery.

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
MONTANA	Yes	No	Yes Generator permit fee $10.00-$1,500 per yr., depending on quantity of waste generated.	Yes TSD facility permit fees (by # of waste management processes) 1) new disposal permit: $4,000 - first process $2,500 - each additional process 2) non-disposal: $2,500 - first process $1,500 - each addtional process 3) permit renewal: $2,000 - first process $1,500 - each additional process 4) process modification: $1,500 - first process $100-500 - minor mod.		
NEBRASKA	No	No	No	No	N/A	N/A
NEVADA	No	No	No	No	N/A	N/A
NEW HAMPSHIRE	Yes	No	Yes $36.36 per ton on all waste generated where volume is over 300 kilo. of waste quarterly; less waste generated, no tax. Maximum $6,000/quarter; minimum $50.00/quarter.	Yes Storage facility fee that receives waste from another state: $6.36/ton.	Funding of cleanup efforts at inactive waste sites (administrative costs, hazardous waste facility siting program, actual containment and clean-up), along with state's share of Superfund.	Expected - $700,000 Received - $80,000

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
NEW JERSEY	Yes	Yes State allows local government to collect 5% post-disposal tax on gross receipts of disposal facilities operating within local jurisdictions.	No	Yes Facility fee for off-site hazardous waste facilities and all solid waste facilities: 1) $50 annual registration 2) $500 per quarter monitoring and surveillance, inspection, and regulation fee 3) $500 engineering design and review fee.	To fund hazardous waste program and provide: (1) compensation for victims of hazardous waste activities. (2) state inspection administration costs. (3) to reimburse municipalities for the costs added to local services, including: (a) extra police and fire costs made necessary by the major hazardous waste facility; (b) local inspection program costs incurred by local board of health department; (c) road construction or repair costs; and (d) other expenses directly related to the impact of the facility on the municipality.	Transporter fee assessed annually $50/hazardous waste vehicle. Pre-generation "front-end" tax.
NEW MEXICO	Yes Enabling legislation just passed for permit fees.	No	No	Yes Permit fees on generators, storers, treaters, disposers of hazardous waste.	To reimburse state costs for investigation and issuing of permits.	Not to exceed cost of investigating and issuing permit.

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
NEW YORK	Yes	Yes $27 per ton for landfill disposal on and off-site (including out-of-state wastes) $9 per ton for treatment off-site (excluding landfills) $2 per ton for on-site incineration (Assessed Quarterly) Exemptions: recycled waste, on-site treatment and disposal, and waste from clean-up efforts.	Yes Annual fee charged by the number of tons per year or waste generated: 4 categories; $500-$20,000.	Yes Annual TSD facility fee 1) base fee - $6,000 or $15,000 depending on quantity of waste handled 2) additional facility fee: $5,000 $10,000 depending on type.	Cleanup of inactive hazardous waste sites, emergency and spill response, remedial actions, investigations of inactive hazardous waste disposal sites, state share of Superfund.	Revenues: Projected: $10 million Actual: $3.0M million 1) on-site - generators pay for waste generated in state. 2) generators pay on waste disposed off-site if waste is internal. 3) TSDF operators pay if waste is from out of state.
NORTH CAROLINA	Yes	No	No	Yes Facility Fee Tax	Emergency response and cleanup for water, post-closure monitoring and maintenance.	State law allows cities and counties where hazardous waste facilities are located to levy one time annual tax on facility operat .s. No revenue because there are no disposal facilities operating in the state.
NORTH DAKOTA	No	No	No	No	N/A	N/A
OHIO	Yes	Yes Tax on commercial disposal facilities only. The rate is 6% of each charge the facility makes for hazardous waste disposal. Only land disposal is taxed. Degree of hazard calculated into price.	No	Yes 1) off-site facilities 9% of charges made 2) on-site facilities $2,000 per 5 acre $ 400 per additional acre $5,000 per deep well 3) annual installation operator permits $1,500	To fund the state's hazardous waste regulatory program, and repayment of loans used for hazardous waste program. Taxes fund both Superfund and RCRA program.	$ 600,000 revenue $ 774,000 $ 57,000 $1,431,000 - Total revenue Disposal tax is at point of disposal; owners/operators of hazardous waste facilities pay the state after collecting the fee from generators.
OKLAHOMA	No	No	No	No		$0.25 per manifest - $5,000 generated annually

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
OREGON	Yes	No	No Generator fee being proposed; deferred to July 1985.	Yes TSD facility fee 1) commercial disposal facility $103,000 (1 facility instate) 2) on-site - storage/treatment facility (on plants capacity to store/treat) -- 50,000 gallons per day - $250/yr. -- 50-500,000 gallons per day - $1,000/yr. -- Over 500,000 gallons per day - $2,500/yr.	Program administration	One facility: $103,000 revenue treatment/storage: $30,000 authority to charge fee to transported.
PENNSYLVANIA	Yes	No	No	Yes Permit application fee for TSD facilities: 1) Storage facilities -- $1,000 2) Surface impoundments -- $3,500 3) Waste piles -- $1,000 4) Land treatment -- $3,500 5) Landfills -- $5,000 6) Thermal treatment -- $2,000 7) Chemical, physical and biological treatment -- $2,500 8) Incinerators -- $2,500	Emergency response situations.	Transporter license application fee: $200.
RHODE ISLAND	Yes	No	No	Yes TSD facility fee not to exceed $1,000/yr. Current charge - $100/yr.		Revenues: Disposal fee - $4,000 T&S fee - $4,000 Total $8,000 Transportation license fee $100/vehicle/yr. Current charge $25/vehicle/yr.

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
SOUTH CAROLINA	Yes Tax is on generators who dispose of waste by land disposal. The rest is covered by owners/operators of landfill.	Yes Landfilled waste only: • in-state - $5.00/ton • out-of-state - $7.50/ton (off-site commercial and on-site.)	No	No	To raise revenue for the clean-up of uncontrolled hazardous waste sites; contingencies from permitted hazardous waste landfills and remedial activities.	$300,000 revenue annually Generators and operators pay at point of disposal.
SOUTH DAKOTA	No	No	No	No	N/A	N/A
TENNESSEE	Yes	No	Yes Flexible rate fees: up to $7,500/yr. for largest generator (by weight generated).	Yes 1) site application fee $1,500-$5,000/year 2) permit maintenance fee (storage, disposal or treatment facilities) up to $10,000 3) annual fee for extremely hazardous waste: $500 4) annual maintenance fee from generators who ship hazardous waste off-site for storage, treatment, or disposal.	1) Emergency response 2) Perpetual care	Transportation fees 1) off-site trans.: $2-$7/ton 2) permit appl. fee: $100 initial $25 renewal 3) generator/shipper fee $100/yr. Revenue - 1,400,000.
TEXAS	Yes	No	No	Yes Permit and postage fee for certain TSD operators $30/application.	For administrative purposes.	Revenues: Old fee: $ 4,000 New fee: $20,000
UTAH	No	No	No	No	N/A	N/A
VERMONT	No	No	No	No		1) Transporter permit application fee $10 2) cab and trailer each $20

WASTE-END TAXES

STATES	LEGISLATION TO COLLECT WASTE-END TAXES	DISPOSAL TAX/RATES	GENERATION TAX/RATES	FACILITY TAX/RATES	USE OF REVENUE	NOTES
VIRGINIA	No	No	No	No	N/A	N/A
WASHINGTON	Yes	No	Yes Annual fee on generators and TSD facilities doing business in state; fee varies with the gross income of business paying it, amount of waste generated, and danger of waste to the public. Cap of $7,500/yr. generator fee - $35-$7,500 TSD fee - $6,000-$7,500	Yes	Administrative purposes and to match state's share of Superfund.	Estimated revenue: $1.06 million.
WEST VIRGINIA	Yes	Yes $1,000/small drum storage unit $5,000/landfill.	No	Yes 1) commercial facility initial permit $10,000 2) major facility initial permit $5,000 3) minor facility initial permit $1,000		
WISCONSIN	Yes	Yes Tipping fee - $0.15-$0.35/ton on land disposal only (depending on post-closure case).	No	Yes 1) Disposal facility license fee - $175-20,000 year (depending of type of operation/size) 2) Plan review fee $ 1,000-$22,500		Transportation license fee $100-$400
WYOMING	No	No	No	No	N/A	N/A

APPENDIX F-1

FEES - FUND

OPTION 6
WASTE END TAX

A. For wastes with a reportable quantity of one pound or less --

1. Those disposed of in landfills, surface impoundments or Class IV wells to pay a tax of $250 per ton.

2. Those disposed of by other means to pay a tax of $30 per ton.

B. For wastes with a reportable quantity of more than one pound --

1. Those disposed of in landfills, surface impoundments or Class IV wells to pay a tax of $100 per ton.

2. Those disposed of by means other than landfill, surface impoundment, or Class IV injection to pay a tax of $15 per ton.

C. All taxes calculated on a total weight basis.

D. Exemptions:

1. Wastes, the regulation of which have been suspended by Act of Congress. Imposition of a tax on such wastes would require an affirmative Congressional enactment.

2. Wastes which are treated or recycled and, therefore, result in no release to the environment.

E. Addition of waste streams for the purpose of taxation: those waste streams resulting from the manufacture of the following substances are to be included in the waste end taxing program unless already regulated by subtitle C of the Resource Conservation and Recovery Act. Such waste streams are to be taxed at the rate applicable to those wastes with a reportable quantity of one pound or less:

SEE ATTACHMENT A.

PESTICIDES IDENTIFIED FOR A REBUTTABLE PRESUMPTION
AGAINST REGISTRATION WITH WASTE STREAMS
REPORTEDLY NOT REGULATED BY RCRA

Benomyl
Diallate
Dimehtoate
EBDC
Ethylene Dibromide
EPN
Ethylene Oxide
Maleic Hydrazide
Pentachloronitrobenzene
1080
Strychnine Sulfate
Thiophante Methyl
Trifluralin
Captan
Capbaryl
DDVP
Methanearsonates
Naled
Parquat
Piperonyl Butoxide
Rotenone
Triallate
Acrylonitrile
Aramite
Benzac
Chloranil
Chlordecone
Copper Acetoarsenite
DBCP
Diflubenzuron
Picloram
Amitraz
Chlorobenzilate
Pronamide

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ATTACHMENT A

CHEMICALS HAVING SUBSTANTIAL EVIDENCE OF CARCINOGENICITY
WITH WASTE STREAMS REPORTEDLY NOT REGULATED BY RCRA

2-Acetylaminoflourene
Acrylonitrile
4-Aminobiphenyl
Amitrole
Aramite
Auramine
Azaserine
Benz(c)acridine
Benz(a)anthracene
Benzidine
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(j)fluoranthene
Chlorambucil
Chloroalkyl Ethers
Chlorobenzilate
Chrysene
Cycasin
Cyclophosphamide
Diallate
Dibenz(a,h)acridine
Dibenz(a,j)acridine
Dibenz(a,h)anthracene
7H-Dibenzo(c,g)carbazole
Dibenzo(a,e)pyrene
Dibenzo(a,h)pyrene
Dibenzo(a,i)pyrene
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane
3,3'-Dichlorobenzidine
1,2-Diethylhydrazine
Diethylstilbestrol
3,3'-Dimethoxybenzidine
p-Dimethylaminoazobenzene
7,12-Dimethylbenz(a)anthracene
3,3'-Dimethylbenzidine
Dimethylcarbamoyl Chloride
1,1-Dimethylhydrazine
1,2-Dimethylhydrazine
2,4-Dinitrotoluene
1,4-Dioxane
1,2-Diphenylhydrazine
Ethylene Bis Dithiocarbamate
Ethyleneimine
Ethylene Oxide
Ethylenethiourea
Ethyl Methanesulfonate
Formal dehyde
Hexachlorobutadiene
Hydrazine
Indeno(1,2,3-cd)pyrene
Iron Dextran
Insosafrole
Kepone
Lasiocarpine
Melphalan
Methapyrilene
3-Methylcholanthrene
4,4'-Methylenebis
Methyl Iodide
Methyl Methanesulfonate
N-Methyl-N'-nitro-N-nitrosoguanidine
Mitomycin C
Mustard Gas
1-Naphthylamine, technical grade
Nitrogen Mustard and its hydrochloride
Nitrogen Mustard N-oxide
and its hydrochloride
5-Nitroquinoline-1-oxide
Nitrosamines
Pentachloronitrobenzene
Phenacetin
Pronamide
1,3-Propane Sultone
6-Propiolactone
Prophylthiouracil
Safrole
Streptozotocin
2,3,7,8-Tetrachlorodibenzo-p-dioxin
Thioacetamide
Thiourea
o-Toluidine Hydrochloride
Toxaphene
Trichloroethylene
2,4,6-Trichlorophenol
Tris(1-aziridinyl)phosphine sulfide
Tris(2-3-dibromopropyl)phosphate
Trypan Blue
Urethane

APPENDIX F-2

ANALYSIS OF OPTION 6 -- WASTE-END TAX

1. INTRODUCTION

This option proposes taxing the disposal of hazardous wastes according to the following system:

Wastes with a reportable quantity (RQ) of one pound or less

- $250 per ton for disposal in landfills, surface impoundments, or Class IV injection wells;
- $30 per ton for disposal by other means;

Wastes with an RQ greater than one pound

- $100 per ton for disposal in landfills, surface impoundments, or Class IV injection wells; and
- $15 per ton for disposal by other means.

Wastes that are treated or recycled and wastes that Congress has suspended regulation of are exempt from taxation.

2. ESTIMATED ANNUAL REVENUES

Estimated annual revenues from this waste-end tax range from $316 million to $2,960 million, based on the April 1984 report by Westat, Inc. of the quantity of hazardous wastes generated and managed in the U.S. in 1981.[1] The wide range is caused by two factors. First, the degree of precision surrounding the report's estimate of the total quantity of hazardous wastes managed in 1981 is low; the statistical confidence interval ranges from an upper bound of +48.8 percent to a lower bound of -36.5 percent.[2] Second, state experiences with waste-end taxes indicate that significant reductions in the tax base have been associated with the implementation of hazardous waste control regulations and waste-end taxes.[3] To account for possible reductions in the tax base, the following adjustments were made:

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[1]Westat, Inc., National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated Under RCRA in 1981 (Maryland: Westat, Inc., April 20, 1984).

[2]Westat, Inc., pp. 163, 164.

[3]U.S. General Accounting Office (GAO), State Experiences with Taxes on Generators or Disposers of Hazardous Waste (Washington, D.C.: GAO, May 4, 1984), GAO/RCED-84-146.

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- The estimated quantity of hazardous waste disposed in 1981 was reduced by two percent per year to reach a 1986 base value; and

- The 1986 base value was reduced by 60, 80, and 90 percent to represent the potential reduction in the tax base due to regulatory and tax influences.

The resulting estimated annual tax revenues are shown in Exhibit 6-1.

3. METHODOLOGY

A computer printout of the Westat data prepared by Development Planning and Research Associates, Inc. (DPRA) on March 13, 1984 was used to tabulate the quantities of hazardous wastes disposed in 1981 by (1) method of disposal and (2) reportable quantity (RQ) of the EPA- designated waste stream.[4] As estimated 46 million metric tons were land disposed or injected in 1981 according to the Westat data. Exhibit 6-2 presents the resulting estimates of the annual tax base.

As noted earlier, these estimates of the annual taxable quantity were adjusted to 1986 by assuming a two percent annual reduction in hazardous waste disposed since 1981--the year of the initial data. The 1986 base values were further reduced by 60, 80, and 90 percent to reflect the potential reduction in the tax base due to regulatory and tax influences. Although these shrinkage factors were chosen somewhat arbitrarily, they generally are supported by the U.S. General Accounting Office report on state experiences with waste-end taxes.[5] According to the report, three states with waste-end taxes similar to a potential federal waste-end tax have not collected the revenues they anticipated:

- In New Hampshire, tax receipts were 89 percent less than anticipated for both of the first two years of the tax (1982 and 1983);

- In New York, actual tax collections in 1982--the first year of the tax--were 70 percent less than anticipated; and

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[4]The various hazardous waste streams were divided into those with a proposed RQ of one pound and those with a proposed RQ greater than one pound. EPA proposed RQ adjustments were employed rather than the RQs established in section 102(b) of CERCLA.

[5]U.S. General Accounting Office, pp. 8-14.

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EXHIBIT 6-1

OPTION 6 -- ESTIMATED ANNUAL TAX REVENUES
(Million $)

Tax Base	Lower Bound (-36.5%)	Westat Value	Upper Bound (+48.8%)
60% Shrinkage	1,263	1,989	2,960
80% Shrinkage	632	995	1,480
90% Shrinkage	316	497	740

Source: Estimated from Westat Inc., National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated Under RCRA in 1981 (Maryland: Westat Inc., April 20, 1984), and computer printout of the Westat data (quantities of hazardous waste managed by waste code and by process) prepared by DPRA, March 13, 1984.

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EXHIBIT 6-2

OPTION 6 -- ESTIMATED ANNUAL TAXABLE QUANTITY[1]
(Thousand Metric Tons)

	Wastes Disposed of in Landfills, Surface Impoundments, or Class IV Injection Wells[2]	Wastes Disposed of by Other Means
RQ ≤ One Pound		
Base	15,360	8,236
60% Shrinkage	6,144	3,294
80% Shrinkage	3,072	1,647
90% Shrinkage	1,536	824
	(Tax = $250/short ton or $275.58/metric ton)	(Tax = $30/short ton or $33.07/metric ton)
RQ > One Pound		
Base	1,749	16,660
60% Shrinkage	700	6,664
80% Shrinkage	350	3,332
90% Shrinkage	175	1,666
	(Tax = $100/short ton or $110.23/metric ton)	(Tax = $15/short ton or $16.53/metric ton)

[1]Tonnage adjusted to 1986 assuming a two percent annual reduction in waste disposed after 1981--the year of the initial data.

[2]Annual disposal in Class IV injection wells is assumed to equal 3.1 percent of the total quantity of wastes disposed each year in underground injection wells.

Source: Westat Inc., National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated Under RCRA in 1981 (Maryland: Westat Inc., April 20, 1984), and computer printout of the Westat data (quantities of hazardous waste managed by waste code and by process) prepared by DPRA, March 13, 1984.

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- In California, tax collections in 1981--the first year of the tax--were eight percent less than expected and, for 1982, were 24 percent less than expected.[6]

The amount of shrinkage in the tax base under Option 6 could be even larger than that experienced by New Hampshire, New York, and California. These states imposed a maximum tax rate of $36 per ton with most of the tax rates well below $20 per ton. Because the tax rates under Option 6 are significantly larger (up to $250 per ton), the incentives for under-reporting or non-reporting of waste disposed are probably greater under Option 6.

4. ASSUMPTIONS

There are a number of assumptions, caveats, and uncertainties that have an important effect on the findings of this analysis. These assumptions are listed below:

- Disposal by underground injection represents more than one-half of the tax base, but the amount of waste injected in Class IV wells versus other types of wells is not precisely known. This is an important distinction because wastes injected in Class IV wells incur a significantly higher tax rate than wastes injected in other types of wells. According to Michael Burns, the EPA Project Officer for the survey conducted by Westat, Inc., the amount of wastes injected in Class IV wells ranges from an estimated 3.1 percent to 5.9 percent of the total amount of waste disposed by underground injection. The lower bound was used to generate the estimates presented above so as to underestimate potential revenues rather than overestimate them.

- Although wastes which are treated are exempt from taxation, it was assumed that the category, "Quantity Land Treated" in the Westat survey would not represent wastes that are treated sufficiently to qualify for the exemption.

- Those wastes for which (1) no EPA code is available, and (2) the survey respondents did not know or ascertain the chemical constituents of the waste stream are not included in the estimated tax base. It is not known whether these wastes are hazardous or not. This adjustment lowers the estimated tax base by at least 3.8 million tons, or nine percent.

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[6]U.S. General Accounting Office, pp. 8-14. The GAO found that the shortages were due to "inaccurate revenue projections, poor economic conditions during the tax years, loss of waste from out-of-state generators, changing tax rates, and taxpayer reporting errors" (p. 8).

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- EPA proposed RQ adjustments for waste streams were used rather than the RQs established in CERCLA section 102(b).

- Tax rates imposed under Option 6 were assumed to be in short tons.

- Shrinkage in tax base:

  -- A two percent reduction per year in 1982-1986.

  -- Further reduction of the 1986 base by 60, 80, and 90 percent.

- Conversion factors:

  -- 0.00371952 metric tons per gallon.

  -- 1.10231000 short tons per metric ton.

5. POTENTIAL ENVIRONMENTAL AND REGULATORY IMPACTS

A waste-end tax is intended to create an economic incentive for generators and disposers to minimize their tax burden by:

- Waste reduction at the source; and/or
- Waste management by safer methods (i.e., methods other than land disposal and disposal by well injection).

The success of these incentives depends on alternative management methods being technologically feasible and economically attrative.

At the same time, the proposed tax on hazardous wastes under Option 6, by taxing only disposal activities, by establishing differential rates for underground injection (Class IV wells are assessed a higher tax than other types of wells), and by imposing relatively high tax rates (up to $250 per ton), may create incentives for:

- Inadequate treatment, incineration or recycling;

- Shifts in types of underground injection to perhaps less well regulated methods; and/or

- Under-reporting, non-reporting, and illegal disposal.

To prevent these undesirable consequences, there must be an operating and effective hazardous waste regulatory and enforcement program. These conditions have not yet been attained. Many harmful waste management practices are still available at less cost due to:

- Insufficient federal, state, and local enforcement capabilities which provide varying levels of deterence among the states;

- The dependence of the RCRA regulatory program on self-reporting of waste generation and management; and
- The significant remaining loopholes in the federal and state regulatory framework.

No analysis has been conducted of the extent to which a $100 or $250 per ton tax would cause significant shifts to greater waste reduction or safer waste management practices, or to undesirable alternatives. No state has experience with the incentives created by tax rates even approaching these rates. California, which has imposed a waste-end tax for three years, has observed reported overall hazardous waste volumes decline 42 percent over that three-year period and highest hazard wastes decline 66 percent, at tax rates only now approaching $25 per ton. New York observed nearly a 70 percent decrease between estimated and actual reported waste volumes in the first year of imposing a maximum assessment rate of $12 per ton. Neither state, despite substantial efforts, has been able to account for most of the change in reported waste volumes.[8] Further, the New York State Department of Environmental Conservation (NYSDEC), while attempting to strengthen its waste-end assessment system and increase the funds available to the state's remedial program, has refused to consider rates substantially above $25 per ton or extending the tax to on-site storage and treatment due to fears that it is not presently possible to detect and prevent any increase in under-reporting and illicit disposal which could be induced.[9]

Other states with waste-end taxes at rates comparable to or lower than California and New York have experienced major declines in reported waste volumes following introduction of waste-end taxes. In accounting for these changes in reported waste volumes, states have not been able, because of the absence of reliable data, to determine the relative importance of such factors as illegal disposal, under-reporting of wastes, declines in economic activity, inaccurate projections of anticipated waste volumes, waste reduction via recycling and process change, abuse of recycling and other exceptions, and decreases in wastes sent into the state for disposal. It is clear, however, that declines in reported waste volumes after introduction of a waste-end tax are not due solely to improved waste management practices or to the recent economic recession.

It is difficult to predict what may happen in response to a tax of $100 to $250 per ton. Because the price variations are significant among management methods and regions of the country, a uniform national tax on land disposal may cause shifts to safe methods in some areas and to under-reporting and illegal disposal in others. When wastes must be transported long distances to use a safer management method, the economic incentive provided by the tax is proportionately reduced by the new transport costs. Many other market factors can have similar cost impacts.

In conclusion, a major concern among many states is that waste-end taxes, at rates substantially below those being proposed here, have already induced shifts in waste management practices, but even in the larger states with extensive program experience it has been impossible to determine the extent to which the shift is to waste reduction and safer waste management or to circumvention of the regulatory program and, even more troubling, to unsafe or illegal disposal.

A second concern widely expressed by the states is that a significant federal waste-end tax will result in increased pressure for repeal of state waste-end fees and taxes. Several states already report the occurrence of such pressures. Many states depend on these assessments to finance all or part of their regulatory and/or cleanup programs.

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[8] U.S. General Accounting Office.

[9] Statements made by Langdon Marsh, Deputy Commissioner of NYSDEC; Norman Nosenchuck, Director, Division of Solid and Hazardous Waste, NYSDEC; Charles Goddard, Director, Superfund Program, NYSDEC in May and June, 1983.

APPENDIX F-3

FEES - FUND

OPTION 7
TAXING RELEASES TO THE ENVIRONMENT OF HAZARDOUS SUBSTANCES

A. For those hazardous substances with a reportable quantity of one pound or less --

1. Those released to the environment without a permit to pay a tax of $250 per ton.

2. Those released to the environment pursuant to permit to pay a tax of $30 per ton.

B. For those hazardous substances with a reportable quantity of more than one pound --

1. Those released into the environment without a permit to pay a tax of $100 per ton.

2. Those released into the environment pursuant to a permit to pay a tax of $15 per ton.

C. In those cases where calculating the amount of the release is not possible (e.g., fugitive hydrocarbon emissions), the tax is to be an annual permit fee based on source throughput.

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DISCUSSION OF OPTION 7 --

TAXING RELEASES OF HAZARDOUS SUBSTANCES TO THE ENVIRONMENT

This option contemplates taxing known releases of all hazardous substances into the environment from all sources. Tax rates are dependent upon two factors: reportable quantity (RQ) of the substance released and permit status of the source of release. The two factors result in four tax rates which are:

	PERMITTED RELEASE	NON-PERMITTED RELEASE
RQ ≤ 1 lb.	$30/ton	250/ton
RQ > 1 lb.	$15/ton	100/ton

To determine the revenue raising potential of this option, it is first necessary to identify all categories of releases of hazardous substances into the environment. CERCLA defines "release" very broadly. Although workplace exposure, engine emission, most radioactive material, and fertilizer application releases are exempted, virtually all other discharges, emissions, spills, leachings, etc. are potential releases. Obvious categories of releases include all air emissions, wastewater discharges, hazardous wate disposal, pesticide applications, nonpoint source runoff, ocean dumping, and dredged or fill material disposal. Releases from these sources alone number into the thousands annually.

Complicating matters further is the fact that there are approximately 700 CERCLA hazardous substances. While all hazardous substances are not constituents of each category of release, many hazardous substances are released in air emissions, wastewater discharges, and hazardous waste disposal. Although data exist for some categories of releases, i.e., hazardous waste disposal, not all stacks and outfalls have been monitored for all hazardous substances. Furthermore, it is unclear to what extent the hazardous substance composition of less well studied categories of releases has been characterized.

Because of the magnitude of the task and uncertainties in data availability, the revenue raising potential of this option could not be estimated within the timeframe of this analysis. Given sufficient time, data could possibly be gathered and analyzed to produce an order of magnitude estimate of the annual revenues this option might generate if enacted. The ability to actually develop an estimate and determine uncertainty limits associated with the estimate would have to await actual data gathering efforts.

DRAFT

It may be possible to achieve similar results to this revenue option by considering a less complex taxing system. A tax system for permitted releases could be designed around imposing a tax on categories of facilities rather than a tax on releases of individual hazardous substances. Examples of facility categories could include stationary combustion installations, process air contamination sources, NPDES facilities under the Clean Water Act, hazardous waste generation sources, and hazardous waste treatment, storage, and disposal facilities. Rates could be differentiated within a category by such gross parameters as tons of particulates or SO_2 for emission sources, flow and major constituents for NPDES facilities, and tons of waste generated or managed by hazardous waste facilities.

New York has enacted an environmental regulatory fee system similar to the facilities tax system described above. Its purpose is to raise revenues to support the costs of New York's environmental regulatory control programs. After one year's experience,[1] the state system does not appear problem-free; however, it has proved to be workable. To establish a similar federal system, facility categories and tax rates could be designed around defined objectives and revenue targets.

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[1]New York State Department of Environmental Conservation, "First Annual Report on the Environmental Regulatory Fee System Established by Article 72 of the Environmental Conservation Law" (January 16, 1984).

APPENDIX G

PRELIMINARY ANALYSIS OF ALLIED CORP. PROPOSAL TO IMPOSE A FEE ON SOLID WASTE DISPOSAL TO HELP RAISE REVENUES FOR A REAUTHORIZED CERCLA

INTRODUCTION

This paper presents the findings of a preliminary review and analysis of a proposed nationwide $3 per ton tipping fee on the land dipsosal of residential, commercial, and industrial trash. This proposal, which originated from Allied Corporation, was made before the Committee on Ways and Means of the United States House of Representatives during the Superfund reauthorization process. The proposed tipping fee is in addition to existing Superfund tax assessments and is designed to provide additional revenues to clean up Superfund landfill sites and to provide a source of revenue to the states.

The paper addresses three major areas of concern:

- Substantiation of the quantity of waste involved and the projected revenues as stated in the Allied proposal.
- Analysis of the economic impact on businesses and alternate waste recovery/disposal methods.
- Problems associated with state administration of the program.

This paper is organized as follows: This section describes the details of the proposal, the approach to the study and limitations on the data available. The main findings are also discussed. The second section consists of analysis of the three major areas of concern mentioned above.

Details of the Proposal

The fee, which will be imposed as a tax on the lard disposal of residential, commercial, and certain industrial trash, is projected to generate approximately $540 million nationwide, annually. The fee would be in addition to an existing average tipping fee nationally estimated at $10.80 per ton. Revenues from this fee would be distributed two-thirds to the federal government and one-third to the states. The tax revenue estimate is based on an estimated 180 million tons of trash collected and disposed of annually at landfills in the United States.

The tax would be collected by the states apparently as a waste-end tax or facility fee levied against each landfill. The proposal presumes that the states would have an incentive to administer the program through their portion of the revenues generated by the tax. The imposition of the tax is also expected to:

- Broaden the taxpayer base to match more closely the sources of the waste disposal problem.

- Add a reliable source of revenue for the clean up effort over the next decade.

- Provide an incentive for improved waste management practices.

Approach and Limitations to the Study

We attempted to verify through independent sources the cost data and other information quoted in the proposal. In addition, we reviewed previous reports and publications dealing with solid waste disposal statistics and financial information. Our examination involved interviewing a number of individuals involved in the accumulation of this data on an ongoing basis.

In general, very little current statistical and cost information is available on the quantities of solid waste generated and the number of landfills operating nationwide. Much of the data was gathered from incomplete surveys and gross estimates based on per capita waste generation rates and estimates of average tipping fees. In some instances, the data were based on information gathered in the late 1970's and reports prepared during 1981.

Much of the statistical information was based on small survey samples and, thus, broad conclusions should be made with caution.

Main Findings

The analysis indicates that the proposed imposition of a $3/ton tax on land disposal of residential, commercial and industrial trash may not be feasible. The main findings are summarized below.

- The estimated $540 million to be collected annually from the tax is perhaps overstated for two reasons. First, it is based on waste generation estimates while the tax is imposed on land disposal. Wastes subject to resource recovery and incineration would not be taxed. Second, the experiences of several states which have recently imposed waste-end taxes on hazardous wastes are that revenues actually collected are below projected amounts. If state experiences with hazardous waste disposal taxes are indicative of a solid waste disposal fee, the shortfall may be in excess of 30 percent of projected revenues.

- The cost of monitoring the disposal of wastes and collecting the tax could be significant. If states were required to fund the administration of the system from their share of the revenues, the net revenues to them could reduce their incentive to support the proposal.

- The $3/ton tax would probably not impose a burden on either the business community or residential owners/ occupants. However, the administrative burden of collecting this levy from the generating sources could be excessive and would be borne by individual municipal governments.

ANALYSIS

Exhibit 1 shows the breakdown of solid wastes generated for the year 1977.[1] Muncipal and industrial wastes account for only 8 percent of all wastes generated. The estimated quantity of trash generated by residential, commercial, institutional, and industrial organizations (excluding sludge, ash and liquid wastes) is approximately 180 million tons. This gross estimate is based on the assumption that residences generate a half ton per capita and commercial establishments one quarter ton per capita of refuse each year.[2] Assuming a resource recovery rate of 8 percent (the rate prevailing in 1978)[3] the net disposal of waste material at municipal or private landfills would be in the region of 166 million tons annually. The actual figure may even be lower because the amount of solid waste incinerated has not been taken into account due to lack of data.

The number of landfills nationwide which would not be classified as "open dumps" is in excess of 12,000. This figure is based on 1980 survey of 48 states conducted by Waste Age.[4] A more recent draft report, which contained the results of a survey of 43 states conducted during 1983 identified approximately 10,400 landfills in the responding states.[5] The latter survey indicates that 60 percent of these landfills are publicly owned and operated.

Estimates of Revenue

Few states have experimented with the use of a tipping fee on landfills as a source of revenue for refuse disposal. Three states have taxes on non-hazardous wastes: New Jersey, California, and Wisconsin. New Jersey and Wisconsin collect taxes to pay for landfill closures. In addition, New Jersey and California tax landfill disposal of solid wastes to finance resource recovery facilities and research efforts. The experience of New Jersey in administering these taxes is encouraging although this may be attributable

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[1]Source: Environmental Quality 1981, CEQ, 1981.

[2]Source: National Solid Waste Management Association.

[3]Source: Solid Waste Data, EPA, August 1981.

[4] Waste Age, "1980 Land Disposal Survey," Vol. 12, January 1981.

[5]ASTSWMO, EPA, Waste Age, National Solid Waste Survey (Preliminary Report).

EXHIBIT 1

ESTIMATED QUANTITIES OF SOLID WASTE GENERATED

Waste Source	Metric Tons (millions)	Percent of Total
Residential	100-110	1.9
Commercial/Institutional	50	0.9
Industrial:		
a. Trash	15	0.3
b. Other non-hazardous (including sludge, ash and liquid wastes)	285	5.1
Mining	2,000	36.1
Agricultural	3,000	54.2
Utilities	70-100	1.5

to the relatively small number of non-hazardous waste landfills that are taxed (121) in that state. In New Jersey, revenues collected from waste-end taxes on non-hazardous waste landfills have increased every year since the imposition of the tax in fiscal year 1982. However, the experiences of the two largest states with related hazardous waste programs, New York and California, are informative. In both states, reported waste volumes have declined significantly after imposition of a waste-end tax. California observed a 28 percent decline in reported waste volumes over the first two years of the state's Superfund tax. In New York, the anticipated decline in reported waste volumes over the first year of the tax is 59 percent.

The financial consequences of potential under-reporting of waste disposal are evident in Exhibit 2 which shows the hazardous waste-end tax revenue experience of several states. The states have used the self-reporting mechanism under RCRA to identify taxable parties, substances, and activities. Except in a handfull of states, there is no effective system for monitoring of non-hazardous sanitary landfills in place.

At those landfills which are manned with local or municipal personnel, the role of these monitors is generally limited to directing traffic and not carefully monitoring the number of trucks or volume or weight of trash delivered. It is, therefore, difficult to estimate the portion of the $497 million projected revenues (adjusted for resource recovery) which could realistically be collected at landfills. Assuming an average under-reporting of wastes of 30 percent (this is consistent with reported experience with hazardous waste-end taxes), the projected revenues would decline by $149 million to $348 million (70 percent x 180 million ton x 92 percent x $3/ton). Of this amount, the states would receive a total of only $116 million annually (1/3 x $348 million).

Tax Collection Costs

It is very difficult to estimate the cost of administering such a tax. In any event, the financial and resource burden on the majority of states could be significant. If, for example, half of the municipally owned landfills were required to hire a monitor to determine waste volumes received at an annual cost of $15,000 per monitor, the total annual cost would be $5.4 million. In the absence of formal recordkeeping systems at the state level, state costs to administer the tax would likely be substantial.

Economic Impact of the Tax

The national average landfill tipping fee is currently estimated at $10.80 per ton. Although an additional $3.00 per ton levy would represent approximately a 30 percent increase in the tipping fee, this cost could, in theory, easily be absorbed by the generating sources. On the basis of per capita rates of waste generation of between a quarter and a half ton, the annual cost per capita would be less than $2.00. While this fee would not be borne equally by all generators of waste, the individual cost should not be prohibitive, even for a small business concern.

EXHIBIT 2

STATES HAZARDOUS WASTE-END TAX REVENUE EXPERIENCE
($000)

State	Projected Revenues	Actual Revenues	Revenue Shortfall	Shortfall as Percent of Projected Revenues
California[1]	$10,000	$ 9,013	$ 987,	10%
Ohio	900	736	164	18
California[2]	8,,36	5,297	3,439	39
Missouri	250	94	156	62
New York	10,000[3]	3,200	6,800	68
New Hampshire	1,000	70	930	93
TOTAL	$30,886	$17,910	$12,976	42%

[1]California's generator tax funding the Hazardous Waste Control Account (the State's "Superfund").

[2]California's disposal fees supporting the State's Hazardous Substance Account.

[3]Initial revenue projection. This projection subsequently was revised to between $7 and $8 million annually. Given this revised projection, the actual revenue collections represent a 34 to 60 percent shortfall.

Source: ICF Incorporated.

The imposition of the tax would almost certainly increase the attractiveness of alternate waste recovery methods. For instance, waste recovery facilities currently charge on average, greater than $14.00 per ton for waste received.[6] The proposed tax on landfill deposits would reduce the cost differential between cost recovery tipping fees and the cost of landfill dumping.

However, as stated earlier in this study, the revenue collection experience of the states which have recently imposed a tipping fee on waste disposal, has not been very encouraging. Disposal contractors may opt to under-report the waste disposal of rather than attempt to recover the cost elsewhere.

Legal and Administrative Problems

To be equitable, this tax should also be imposed on both on-site and off-site facilities. This may be administratively difficult and in some instances illegal. For instance, the laws of Illinois may prohibit the permitting of industrial on-site facilities and would presumably not permit the imposition of a statewide tipping fee.

The monitoring and administration of most landfill sites is currently conducted by municipalities and localities and not the state government. This practice persists despite increased state involvement in the planning and overall regulation of statewide waste disposal facilities. In order to administer the collection of the proposed tax, the state governments would either have to become much more involved in the daily operation of non-hazardous disposal activity or, would have to delegate this responsibility to the municipalities. In the latter case, there may be large inconsistencies in the rate of tax collection.

The collection and disposal facilities for many muncipalities are financed from general tax revenues and not from a separate waste collection fee. In the event of the imposition of the proposed tax, these municipalities would be required to establish an accounting and revenue collection system so as to recover these costs from the individual sources of waste generation.

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[6]Source: National Solid Waste Management Association.

APPENDIX H

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ANALYSIS OF A HAZARDOUS SUBSTANCE GENERATION TAX

1. INTRODUCTION

As part of the CERCLA reauthorization, the Senate Environment and Public Work Committee is considering a tax on the most frequently found hazardous substances at Superfund sites. It appears as a complementary option to the feedstock tax currently in place because hazardous substances which are taxed as feedstocks would be exempt from the proposed taxes.

This system proposes that taxes be imposed on substances found at two percent or more of Superfund response actions. Specifically, it considers five alternatives for taxing these frequently found substances:

1. Tax rate of one percent of value (at first sale or importation) for each five percent of Superfund sites at which the chemical appears;

2. Same as above, except with cap on tax rate of three percent;

3. Tax rate of one percent of value for each two percent of Superfund sites at which the chemical appears;

4. Same as above, except with cap on tax rate of three percent; and

5. Tax rate of 0.5 percent for each 10 percent of Superfund sites at which the chemical appears (original Senate Option 5).

Using alternative 5 as an example, the option is applied as follows. Substances found at 10 percent of Superfund response actions are taxed at 0.5 percent of their value at first sale or importation. Substances found at greater than 10 percent but less than 20 percent of Superfund response actions are taxed at twice the initial rate, or one percent of value. Increasing frequency of occurrence of a substance at Superfund response actions increases the tax rate. Each 10 percent increase in frequency adds another 0.5 percent to the tax rate. For purposes of this analysis, the operational definition of Superfund response actions is the 877 computer-scored hazardous waste sites ranked under the Hazard Ranking System (HRS).

The apparent rationale for this option is to have tax rates reflect in some way the relative contribution that taxed substances make to the overall Superfund program. To achieve this objective fully would require more thorough characterization of the volume and concentration of each hazardous constituent at a site that is feasible. The proposed tax system instead uses a surrogate for relative contribution of taxed substances at response actions, i.e., frequency of occurrence. Because of the relatively skewed nature of the frequency of occurrence data on hazardous substances at HRS sites, the tax base is limited to a small number of chemicals.

2. ESTIMATED ANNUAL REVENUES

The estimated annual revenues from each alternative under this option are shown in Exhibits 1 through 5. For each taxed chemical or chemical category under each alterntive, the value of U.S. shipments, value of U.S. imports, annual tax base, number of sites at which the chemical appears, percentage of HRS-scored sites that the chemical appears, tax rate, and estimated tax revenues are shown. The total annual tax revenues under the alternatives of this option are as follows:

1. One percent tax on each five percent occurrence: $127 million;
2. As above, with three percent cap on tax rate: $125 million;
3. One percent tax on each two percent occurrence: $324 million;
4. As above, with three percent cap on tax rate: $212 million; and
5. 0.5 percent tax on each 10 percent occurrence: $18 million.

3. METHODOLOGY

The chemical substances found at the 877 HRS computer-scored sites were listed by computer according to their frequency of occurrence at the sites. Those chemicals found at more than two percent of the sites are subject to taxation under this option (see Exhibit 6). An exemption is made regarding those chemicals taxed under Option 1. This provision results in the following chemicals being exempt from taxation: naphthalene, toluene, benzene, xylene, lead, arsenic, cadmium, mercury, chromium, manganese, selenium, zinc, and nickel. Several categories ranked as appearing at more than two percent of the HRS computer- scored sites were not clearly defined and thus not included. These were: acid, NOS (not otherwise specified); volatile organics, NOS; heavy metals, NOS; and "more than 15 substances listed." The remaining chemicals appearing at the required percentage of HRS computer-scored sites under each alternative are shown in Exhibits 1 through 5.

The value of U.S. shipments and value of U.S. imports were obtained for each of these chemicals or chemical categories. The sum of these values constitutes the tax base for each chemical. The tax rate was obtained by calculating the percentage of sites where each chemical is found, and imposing a tax for each appropriate percent, or part thereof, of this site-occurrence percentage. Estimated tax revenues were calculated by multiplying the tax rate by the tax base.

EXHIBIT 1

ESTIMATED CERCLA TAX REVENUES FOR TAX RATE OF 1 PERCENT FOR EACH 5 PERCENT OF HRS SITES

Hazardous Substance	Number of HRS Sites	Percent of Total HRS Sites	U.S. Shipments (Thousand 1982 $) a/	U.S. Imports (Thousand 1982 $) a/	Annual Tax Base (Thousand 1982 $)	Proposed Tax Rate (%)	Estimated Annual Tax Revenue (Thousand 1982 $)
Trichloroethylene	236	26.9	37121	3337	40458	6.0	2428
Polychlorinated biphenyls	175	20.0	0 b/	0 b/	0	4.0	0
Chloroform	132	15.1	66571	2205	68776	4.0	2751
Phenol	126	14.4	268358 c/	136	268494	3.0	8055
1,1,2,2-Tetrachloroethene	119	13.6	70235	4957	75192	3.0	2256
1,2-Dichloroethylene	117	13.3	N/A	N/A	N/A	3.0	N/A
1,1,1-Trichloroethane	116	13.2	144412	N/A	144412	3.0	4332
Zinc and zinc oxide	106	12.1	606749 d/	520426 e/	1127175	3.0	33815
Ethylbenzene	103	11.7	77154	N/A	77154	3.0	2315
Methylene chlorice	87	9.9	67041	5728	72769	2.0	1455
Soluble cyanide salts	74	8.4	N/A	10993 f/	10993	2.0	220
Copper and compounds	68	7.8	2874463 g/	0 h/	2874463	2.0	57489
Vinylchloride	57	6.5	417595	6308	423903	2.0	8478
Chlorobenzene	56	6.4	20182 i/	N/A	20182	2.0	404
1,1-Dichloroethane	52	5.9	N/A	N/A	N/A	2.0	N/A
1,2-Dichloroethane	52	5.9	95608	4052 j/	99660	2.0	1993
Carbon tetrachloride	51	5.8	39885	254	40139	2.0	803
TOTAL	---	---	4785374	558396	5343770	---	126794

Note: Tax rate assessed at one percent of the taxable value for each five percent, or fraction thereof, of HRS computer-scored sites indicating presence of substance. Footnotes and references found following last exhibit.

EXHIBIT 2

ESTIMATED CERCLA TAX REVENUES FOR TAX RATE OF 1 PERCENT FOR EACH 5 PERCENT OF HRS SITES, WITH CAP OF 3 PERCENT

Hazardous Substance	Number of HRS Sites	Percent of Total HRS Sites	U.S. Shipments (Thousand 1982 $) a/	U.S. Imports (Thousand 1982 $) a/	Annual Tax Base (Thousand 1982 $)	Proposed Tax Rate (%)	Estimated Annual Tax Revenue (Thousand 1982 $)
Trichloroethylene	236	26.9	37121	3337	40458	3.0	1214
Polychlorinated biphenyls	175	20.0	0 b/	0 b/	0	3.0	0
Chloroform	132	15.1	66571	2205	68776	3.0	2063
Phenol	126	14.4	268358 c/	136	268494	3.0	8055
1,1,2,2-Tetrachloroethene	119	13.6	70235	4957	75192	3.0	2256
1,2-Dichloroethylene	117	13.3	N/A	N/A	N/A	3.0	N/A
1,1,1-Trichloroethane	116	13.2	144412	N/A	144412	3.0	4332
Zinc and zinc oxide	106	12.1	606749 d/	520426 e/	1127175	3.0	33815
Ethylbenzene	103	11.7	77154	N/A	77154	3.0	2315
Methylene chloride	87	9.9	67041	5728	72769	2.0	1455
Soluble cyanide salts	74	8.4	N/A	10993 f/	10993	2.0	220
Copper and compounds	68	7.8	2874463 g/	0 h/	2874463	2.0	57489
Vinylchloride	57	6.5	417595	6308	423903	2.0	8478
Chlorobenzene	56	6.4	20182 i/	N/A	20182	2.0	404
1,1-Dichloroethane	52	5.9	N/A	N/A	N/A	2.0	N/A
1,2-Dichloroethane	52	5.9	95608	4052 j/	99660	2.0	1993
Carbon tetrachloride	51	5.8	39885	254	40139	2.0	803
TOTAL	---	---	4785374	558396	5343770	---	124892

Note: Tax rate assessed at one percent of the taxable value for each five percent, or fraction thereof, of HRS computer-scored sites indicating presence of substance, with cap on tax rate of 3 percent. Footnotes and references found following last exhibit.

EXHIBIT 3

ESTIMATED CERCLA TAX REVENUES FOR TAX RATE OF 1 PERCENT FOR EACH 2 PERCENT OF HRS SITES

Hazardous Substance	Number of HRS Sites	Percent of Total HRS Sites	U.S. Shipments (Thousand 1982 $) a/	U.S. Imports (Thousand 1982 $) a/	Annual Tax Base (Thousand 1982 $)	Proposed Tax Rate (%)	Estimated Annual Tax Revenue (Thousand 1982 $)
Trichloroethylene	236	26.9	37121	3337	40458	14.0	5664
Polychlorinated biphenyls	175	20.0	0 b/	0 b/	0	10.0	0
Chloroform	132	15.1	66571	2205	68776	8.0	5502
Phenol	126	14.4	268758 c/	136	268894	8.0	21480
1,1,2,2-Tetrachloroethene	119	13.6	[illegible]5	4957	75192	7.0	5263
1,2-Dichloroethylene	117	13.3	N/A	N/A	N/A	7.0	N/A
1,1,1-Trichloroethane	116	13.2	144412	N/A	144412	7.0	10109
Zinc and zinc oxide	106	12.1	606749 d/	520426 e/	1127175	7.0	78902
Ethylbenzene	103	11.7	77154	N/A	77154	6.0	4629
Methylene chloride	87	9.9	67041	5728	72769	5.0	3639
Soluble cyanide salts	74	8.4	N/A	10993 f/	10993	5.0	550
Copper and compounds	68	7.8	2874463 g/	0 h/	287446	4.0	114979
Vinylchloride	57	6.5	417595	6308	423903	4.0	16956
Chlorobenzene	56	6.4	20182 i/	N/A	20182	4.0	807
1,1-Dichloroethane	52	5.9	N/A	N/A	N/A	3.0	N/A
1,2-Dichloroethane	52	5.9	95608	4052 j/	99660	3.0	2990
Carbon tetrachloride	51	5.8	39885	254	40139	3.0	1204
Pentachlorophenol	43	4.9	17633 k/	125 k/	17759	3.0	533
1,1,2,2-Tetrachloroethane	35	4.0	N/A	60	60	2.0	1
Methyl ethyl ketone	33	3.8	164441	11247	175688	2.0	3514
Iron and compounds	28	3.2	1490000 l/	610500 l/	2100500	2.0	42010
Barium	27	3.1	6979 m/	8733 m/	15712	2.0	314
1,1-Dichloroethene	27	3.1	N/A	N/A	N/A	2.0	N/A
DDT	24	2.7	0 n/	N/A	0	2.0	0
Acetone	22	2.5	176563	12565	189128	2.0	3783
Chlordane	21	2.4	31500 o/	0	31500	1.0	315
Lindane	21	2.4	0 p/	2083 q/	2083	1.0	21
Benzo (a) pyrene	20	2.3	0 r/	0 r/	0	1.0	0
Phenanthrene	20	2.3	N/A	2	2	1.0	0
Bis(2-ethylhexyl)phthalate	18	2.1	89660	N/A	89660	1.0	897
TOTAL	--	--	6762150	1203712	7965862	---	324060

Note: Tax rate assessed at one percent of the taxable value for each two percent, or fraction thereof, of HRS computer-scored sites indicating presence of substance. Footnotes and references found following last exhibit.

EXHIBIT 4

ESTIMATED CERCLA TAX REVENUES FOR TAX RATE OF 1 PERCENT FOR EACH 2 PERCENT OF HRS SITES, WITH CAP OF 3 PERCENT

Hazardous Substance	Number of HRS Sites	Percent of Total HRS Sites	U.S. Shipments (Thousand 1982 $) a/	U.S. Imports (Thousand 1982 $) a/	Annual Tax Base (Thousand 1982 $)	Proposed Tax Rate (%)	Estimated Annual Tax Revenue (Thousand 1982 $)
Trichloroethylene	236	26.9	37121	3337	40458	3.0	1214
Polychlorinated biphenyls	175	20.0	0 b/	0 b/	0	3.0	0
Chloroform	132	15.1	66571	2205	68776	3.0	2063
Phenol	126	14.4	268358 c/	136	268494	3.0	8055
1,1,2,2-Tetrachloroethene	119	13.6	70235	4957	75192	3.0	2256
1,2-Dichloroethylene	117	13.3	N/A	N/A	N/A	3.0	N/A
1,1,1-Trichloroethane	116	13.2	144412	N/A	144412	3.0	4332
Zinc and zinc oxide	106	12.1	606749 d/	520426 e/	1127175	3.0	33815
Ethylbenzene	103	11.7	77154	N/A	77154	3.0	2315
Methylene chloride	87	9.9	67041	5728	72769	3.0	2183
Soluble cyanide salts	74	8.4	N/A	10993 f/	10993	3.0	330
Copper and compounds	68	7.8	2874463 g/	0 h/	2874463	3.0	86234
Vinylchloride	57	6.5	417595	6308	423903	3.0	12717
Chlorobenzene	56	6.4	20182 i/	N/A	20182	3.0	606
1,1-Dichloroethane	52	5.9	N/A	N/A	N/A	3.0	N/A
1,2-Dichloroethane	52	5.9	95608	4052 j/	99660	3.0	2990
Carbon tetrachloride	51	5.8	39885	254	40139	3.0	1204
Pentachlorophenol	43	4.9	17633 k/	125 k/	17759	3.0	533
1,1,2,2-Tetrachloroethane	35	4.0	N/A	60	60	2.0	1
Methyl ethyl ketone	33	3.8	164441	11247	175688	2.0	3514
Iron and compounds	28	3.2	1490000 l/	610500 l/	2100500	2.0	42010
Barium	27	3.1	6979 m/	8733 m/	15712	2.0	314
1,1-Dichloroethene	27	3.1	N/A	N/A	N/A	2.0	N/A
DDT	24	2.7	0 n/	N/A	0	2.0	0
Acetone	22	2.5	176563	12565	189128	2.0	3783
Chlordane	21	2.4	31500 o/	0	31500	1.0	315
Lindane	21	2.4	0 p/	2083 q/	2083	1.0	21
Benzo (a) pyrene	20	2.3	0 r/	0 r/	0	1.0	0
Phenanthrene	20	2.3	N/A	2	2	1.0	0
Bis(2-ethylhexyl)phthalate	18	2.1	89660	N/A	89660	1.0	897
TOTAL	--	--	6762150	1203712	7965862		211700

Note: Tax rate assessed at one percent of the taxable value for each two percent, or fraction thereof, of HRS computer-scored sites indicating presence of substance, with cap on tax rate of 3 percent. Footnotes and references found following last exhibit.

EXHIBIT 5

ESTIMATED CERCLA TAX REVENUES FOR TAX RATE OF 0.5 PERCENT FOR EACH 10 PERCENT OF HRS SITES

Hazardous Substance	Number of HRS Sites	Percent of Total HRS Sites	U.S. Shipments (Thousand 1982 $) a/	U.S. Imports (Thousand 1982 $) a/	Annual Tax Base (Thousand 1982 $)	Proposed Tax Rate (%)	Estimated Annual Tax Revenue (Thousand 1982 $)
Trichloroethylene	236	26.9	37121	3337	40458	1.5	607
Polychlorinated biphenyls	175	20.0	0 b/	0 b/	0	1.0	0
Chloroform	132	15.1	66571	2205	68776	1.0	688
Phenol	126	14.4	268358 c/	136 c/	268494	1.0	2685
1,1,2,2-Tetrachloroethene	119	13.6	70235	4957	75192	1.0	752
1,2-Dichloroethylene	117	13.3	N/A	N/A	N/A	1.0	N/A
1,1,1-Trichloroethane	116	13.2	144412	N/A	144412	1.0	1444
Zinc and zinc oxide	106	12.1	606749 d/	520426 e/	1127175	1.0	11272
Ethylbenzene	103	11.7	77154	N/A	77154	1.0	772
TOTAL	---	---	1270600	531061	1801661	---	18219

Note: Tax rate assessed at 0.5 percent of the taxable value for each ten percent, or fraction thereof, of HRS computer-scored sites indicating presence of substance. Footnotes and references found following this exhibit.

FOOTNOTES AND REFERENCES FOR EXHIBITS 1 THROUGH 5

a. The value of U.S. shipments and U.S. imports are reported for 1982, unless otherwise noted.

b. Monsanto, the sole U.S. supplier of PCBs, stopped production in 1977. The use, sale, and manufacture of PCBs has been almost eliminated by legislation under TSCA. Imports are assumed to be zero.

c. The value of U.S. shipments were up markedly in 1983 to $5,506,000.

d. The value of U.S. production of zinc ores and concentrates, slab zinc, and zinc oxide. U.S. shipments are not available. Does not include secondary production, zinc dust, or other zinc chemicals.

e. U.S. imports value of zinc ore and concentrates, slab zinc, and zinc oxide.

f. Includes calcium cyanide, copper cyanide, mercury cyanide, potassium cyanide, potassium ferricyanide, potassium ferrocyanide, sodium cyanide, sodium ferrocyanide, and zinc cyanide.

g. Includes primary refined production, refined production from scrap, copper recovered in alloys and scrap, and refined imports. U.S. shipments are not available. Value estimated by multiplying poundage by domestic product value of $0.728/lb.

h. Imports included in U.S. value of shipments.

i. Monochlorobenzene assumed; import figures available for di- and trichlorobenzenes only.

j. Import category also includes propylene dichloride; assumed to be one-half of total value for this category due to 1,2-dichloroethane.

k. Calculated from 1978 pesticide review poundage, multiplied by wholesale price of $0.441/lb. U.S. imports for 1976 and 1977 were zero, so this figure may vary considerably.

l. Value of iron ore production and imports, assuming 1982 value of $32.5/long ton. Shipments not available.

m. Ninety percent of barite used in well drilling fluids are not included; the other 10 percent is used to make barium chemicals and in paints, glass and rubber. Value calculated assuming price of $37.64/short ton.

n. Sole U.S. supplier no longer producing DDT in 1984.

FOOTNOTES AND REFERENCES FOR EXHIBITS 1 THROUGH 5
(continued)

o. Domestic use of Chlordane was phased out over five years ending in mid 1983, so no revenue could be expected after this time unless the U.S. exports. This is the capacity of the one producing U.S. plant, multiplied by a 1978 value of $1.05/lb. wholesale. Shipments not available.

p. No U.S. production listed in 1984; imported only.

q. Imports as reported in 1978. Value calculated by multiplying poundage by wholesale price of $3.45/lb. for 99 percent pure Lindane. This may result in overestimation if imports are not of this purity.

r. Benzo(a)pyrene is probably not intentionally produced or imported, but rather appears as a by-product or product of incomplete combustion.

Sources: U.S. International Trade Commission, Synthetic Organic Chemicals, 1982; Bureau of Census, U.S. Department of Commerce, U.S. Imports for Consumption (FT 246), 1982; Bureau of Mines, U.S. Department of the Interior, Minerals Yearbook, 1982; U.S. Department of Agriculture, The Pesticide Review, 1978; and Bureau of Mines, U.S. Department of the Interior, Mineral Commodity Summaries, 1984.

EXHIBIT 6 - CHEMICALS AT HRS SITES

OBS	CNAME	FREQ
1		4950
2	LEAD (PB)	243
3	TRICHLOROETHYLENE (TCE)	236
4	TOLUENE	235
5	BENZENE	197
6	POLYCHLORINATED BIPHENYLS, NOS	175
7	CHLOROFORM	132
8	PHENOL	126
9	ARSENIC	124
10	CADMIUM (CD)	122
11	CHROMIUM	120
12	1,1,2,2-TETRACHLOROETHENE	119
13	1,1,1-TRICHLOROETHANE	116
14	XYLENE	115
15	ZINC AND COMPOUNDS, NOS (ZN)	106
16	ETHYLBENZENE	103
17	METHYLENE CHLORIDE	87
18	MERCURY	76
19	CYANIDES (SOLUBLE SALTS), NOS	74
20	1,2-TRANS-DICHLOROETHYLENE	73
21	COPPER AND COMPOUNDS, NOS (CU)	68
22	VINYLCHLORIDE	57
23	CHLOROBENZENE	56
24	CHROMIUM AND COMPOUNDS, NOS (CR)	55
25	1,1-DICHLOROETHANE	52
26	1,2-DICHLOROETHANE	52
27	CARBON TETRACHLORIDE	51
28	NICKEL AND COMPOUNDS, NOS (NI)	44
29	TRICHLOROETHANE, NOS	44
30	PENTACHLOROPHENOL (PCP)	43
31	HEAVY METALS, NOS	41
32	NAPHTHALENE	41
33	MORE THAN 15 SUBSTANCES LISTED	39
34	VOLATILE ORGANICS, NOS	37
35	METHYL ETHYL KETONE	33
36	IRON AND COMPOUNDS, NOS (FE)	28
37	BARIUM	27
38	1,1-DICHLOROETHENE	27
39	MANGANESE AND COMPOUNDS, NOS (MN)	26
40	DICHLOROETHYLENE, NOS	25
41	DDT	24
42	ACETONE	22
43	CHLORDANE	21
44	LINDANE	21
45	BENZO A PYRENE	20
46	PHENANTHRENE	20
47	ACID, NOS	19
48	CHROMIUM, HEXAVALENT	19
49	BIS(2-ETHYLHEXYL)PHTHALATE	18
50	1,1,2,2-TETRACHLOROETHANE	18
51	DIOXIN	17
52	RADIUM AND COMPOUNDS, NOS (RA)	17
53	RADON AND COMPOUNDS, NOS (RN)	17
54	SELENIUM	17
55	TETRACHLOROETHANE, NOS	17

Source: HRS data base

4. ASSUMPTIONS

The following assumptions were made in applying the above methodology to estimate annual revenues for this tax system.

- Zinc and zinc compounds NOS were assumed to include primary zinc and zinc oxide. The value listed is the value of U.S. production rather than U.S. shipments, which was unavailable. This adjustment may result in an overestimate of tax revenues.

- The value listed for iron and compounds is U.S. production of iron ore, and U.S. imports of iron ore. This ore contains approximately 64 percent recoverable iron; because of this fact and the unavailability of U.S. shipment data, an overestimate of tax revenues is likely.

- The value of barium is 10 percent of the U.S. production of barite. Ten percent is the amount used to make barium chemicals and for other barium uses. No data on barium itself was available. Use of production data rather than shipments data may result in overestimation of tax revenues.

- The value for copper and compounds is U.S. production rather than U.S. shipments, resulting in a possible overestimation of tax revenues.

- Monochlorobenzene is assumed for chlorobenzene, as di- and tri-chlorobenzenes appear elsewhere in the computer ranked listing.

- Data for the pesticides DDT, pentachlorophenol, Chlordane, and Lindane were not readily available. Where production has been curtailed it has been so noted, particularly in the case of Chlordane, which was phased out of U.S. use in mid 1983.

- Benzo(a)pyrene is assumed not to be manufactured or imported intentionally. It is a product of incomplete combustion, and is found as a contaminant in coal tar.

- Cyanides (soluble salts) NOS were assumed to include the inorganic soluble cyanide salts of calcium, copper, mercury, potassium, sodium, and zinc.

- U.S. imports of polychlorinated biphenyls (PCBs) were assumed to be zero. The use of PCBs in the U.S. has been phased out due to regulation by EPA; probably only a few pounds per year are used in laboratories.

- U.S. imports of ethylbenzene were unavailable; however, the SRI Chemical Economics Handbook indicates that the U.S. is a net exporter of ethylbenzene. Any contribution to estimated tax revenue from imports may therefore be assumed to be insignificant.

- The tax rate imposed on a substance under alternative 5 of this option equals 0.5 percent of the taxable value if the substance appears at 10.00 - 10.49 percent of the sites; one percent if the substance appears at 10.50-20.49 percent of the sites; 1.5 percent if the substance appears at 20.5-30.49 percent of the sites; and so on. Tax rates are calculated similarly for the other alternatives.

APPENDIX I

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ANALYSIS OF OPTION 4 -- TRANSPORTATION TAX

1. INTRODUCTION

Option 4 proposes a tax upon movements of hazardous materials. Under this proposal:

> ...[E]ach common or contract carrier shall collect and remit to the Treasury a fee of $10 for each movement of a hazardous material.

The tax would be imposed 365 days after enactment of the amendment and would be collected by certain hazardous materials carriers from unspecified parties.

The term "hazardous materials" is defined by the Hazardous Materials Transportation Act (HMTA) and by implementating regulations (49 CFR 171.8) to include those materials or substances in a form or quantity that the Secretary of Transportation has found to pose unreasonable risks to health and safety or property in commerce. At present, there are approximately 2,400 such materials. They have been listed in U.S. Department of Transportation (DOT) hazardous materials tables (49 CFR 172.101 and 172.102). Among these materials are explosives, flammables, combustibles, radioactive materials, human disease-causing agents, and other so-called "characteristic" materials.

Option 4 envisions expanding, within 180 days of enactment, the list of DOT-regulated hazardous materials to include all substances that have been designated as hazardous under CERCLA, many of which currently are present on the hazardous materials tables but are not fully subject to DOT hazardous materials transportation regulations. A number of CERCLA-designated hazardous substances, such as sulfuric acid and chlorine, however, already are fully regulated under HMTA. Thus, Option 4 would impose a tax on hazardous materials movements and, at the same time, expand the list of hazardous materials regulated under HMTA.

As will be explained below, it is difficult to estimate the revenue-raising potential of Option 4 because of data limitations regarding the number of movements of hazardous materials. Nonetheless, rough estimates are attempted. The revenue forecasts presented here do not constitute an endorsement by EPA of any estimate of the number of hazardous materials movements.

2. ESTIMATED ANNUAL REVENUES

Estimated annual revenues from the Option 4 transportation tax range from $700 million to $1.8 billion, with revenues probably closer to the higher figure. These estimates are not to be considered lower- and upper-bound projections; because of data and time limitations, it has not been possible to estimate a confidence interval surrounding the revenue estimate. Rather,

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the estimates should be treated as general approximations of the potential order of magnitude of revenues that might be raised annually under Option 4.

3. METHODOLOGY

Two methodologies were used to obtain estimates of this option's revenue-raising potential. First, telephone interviews with federal officials concerned with hazardous materials movements, appropriate trade associations, and other relevant parties were conducted. Second, government and industry data bases related to transportation of hazardous materials were explored, and simple calculations based upon available data were made. These methodologies were aimed at generating estimates of hazardous materials movements. Once established, such estimates then would be multiplied by the Option 4 tax rate of ten dollars per movement to project revenues.

Both methodologies required the resolution of a number of issues before the formulation of revenue estimates. One issue concerned the time period for analysis. As stated, Option 4 would take effect 365 days after enactment. Because this provision creates uncertainty about the effective date of the tax, recent historical data and estimates based upon them were taken as indicative of future annual tax collections. No attempt was made to extend revenue estimates to future years.

Another issue involved defining relevant terms in the language of Option 4. Specifically, the definition of the following were determined to have a potentially significant implication for revenue estimates: "movement," "each movement," "common" and "contract" carrier, and "hazardous material." For estimation purposes, it was assumed that the terms "movement," "each movement," and "common" and "contract" carrier are defined by concepts implicit in available data related to hazardous materials traffic. For example railroad transportation information is expressed in shipments and carloads, which are assumed to define discreet hazardous materials movements by rail. In particular, imports of hazardous materials carried by rail are not considered.

Hazardous materials, as defined by DOT regulation, include a wide range of substances and products. These materials include certain bulk chemical commodities as well as butane lighters, radiological materials produced by hospitals, human disease-causing agents, and automobiles transported by truck.[1] Whether the intent of the option is to impose a tax upon materials that are not designated as CERCLA hazardous substances nor found at hazardous substance sites is uncertain. In the absence of better information, the DOT definition of hazardous materials was adopted. Changing this assumption to limit tax collections to CERCLA-designated hazardous substances would reduce the revenue estimate.

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[1]Telephone conversation with Alan Roberts, Materials Transportation Bureau, DOT, July 11, 1984.

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The first method used to estimate hazardous materials movement was to consult with federal government and industry experts. The objective of this method was to arrive at a consensus estimate of this movement by contacting a number of sources. Unfortunately, experts agree that it is difficult to estimate hazardous materials traffic, and estimates that were obtained are undocumented and not supported by industry or any federal agency.[2] No federal agency maintains complete records of hazardous materials movements, with the exception of limited sampling of hazardous materials movements by railroad.

Nonetheless, three estimates of annual hazardous materials movement by all transportation modes were obtained:

(1) 180 million movements;[3]
(2) 250,000 shipments per day, or approximately 91.3 million movements;[4] and
(3) 14.3 million shipments per month, or 175.2 million movements.[5]

Multiplying by 10 dollars these estimates yields the following range of revenue estimates: $900 million to $1.8 billion.

The second method employed to estimate revenues was to gather hazardous materials transportation data, by mode of transportation, to construct independent projections of movements. Transportation modes that were investigated include railroad, truck, barge (water), pipeline, and airplane. In terms of volume, railroad traffic accounts for approximately 70 percent of hazardous materials movement.[6] Truck or highway transportation is thought to account for about 30 percent.[7] Consequently, estimates focused on

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[2]The following experts were interviewed by telephone during July 10-12, 1984: David Ingram, Hazardous Materials Advisory Council (HMAC); Don Billings, Sherwood Chu, John K. Pollard, and Alan Roberts, DOT; James Nash, U.S. Interstate Commerce Commission; Dick Doyle, American Trucking Association; Laura Smith and Paul Williams, American Association of Railroads; and Ron Hinkel, United Parcel Service.

[3]Alan Roberts, DOT. This estimate is not documented or supported by DOT.

[4]National Council of State Legislatures, cited by David Ingram, HMAC.

[5]Monsanto Co., cited by David Ingram, HMAC.

[6]Frank Malone, "Commodities by Rail: Chemicals," Railway Age, August 1980, pp. 22-34; cited in Transportation Research Board, Transportation of Hazardous Materials, p. 7.

[7]National Transportation Safety Board, Safety Effectiveness Evaluation--Federal and State Enforcement Efforts in Hazardous Materials Transportation by Truck, Report NTSB-SEE-81-2, February 19, 1981; cited in Transportation Research Board, Transportation of Hazardous Materials, p. 7.

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transportation by railroad and truck modes. Because of the strength of the assumptions associated with them, the estimates that have been derived should only be considered illustrative.

Two independent estimates of the number of railroad movements of hazardous materials were found. The Interstate Commerce Commission (ICC), using a one percent sample of national railroad waybills in 1982, estimates that 590,846 shipments and 659,585 carloads of hazardous materials are made annually.[8] Several qualifications are needed for the interpretation of these estimates: (1) the ICC waybill data are sampling data, (2) the data are based on terminating shipments from relatively large carriers, (3) movements entering the U.S. from other countries are not captured, and (4) the ICC did not statistially process the data and therefore does not guarantee their validity.[9] Multiplying the ICC estimates by $10 per movement produces the following revenue estimates: $5.9 million on a shipment basis and $6.6 million on a carload basis.

Exhibit 4-1 displays information from TRAIN II, a railroad transportation data base maintained by the Bureau of Explosives, American Association of Railroads (AAR). The exhibit lists, in terms of the number of carload originations in the U.S., the top 25 hazardous materials commodities. Also displayed is the total number of hazardous materials movements estimated by AAR to have occurred in 1983, 827,303. The TRAIN II data base is thought to capture approximately 80 percent of all U.S. originations.[10] Accordingly, the estimated number of carloads was escalated by a factor of 1.25 to arrive at a complete estimate of 1,034,000 movements, which would generate approximately $10.3 million dollars in revenues on a carload basis.

Taken together, estimates of hazardous materials movements by ICC and AAR result in revenue estimates from railroad movements ranging from $5.9 million to $10.3 million. To estimate revenues that would be generated from truck movements, the following methodology was used. The number of truck movements of hazardous materials was estimated by dividing estimates of the total volume of truck movements by the predicted average volume of these movements.

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[8]Analysis of ICC waybill data, July 12, 1984.

[9]Office of Policy and Analysis, ICC, Documentation of the ICC Waybill Sample, November 1981. A waybill is defined as the document or instrument prepared from the bill of loading contract or shipper's instructions as to the disposition of the freight, and used by the railroad(s) involved as the authority to move the shipment and as the basis for determining the freight charges and interline settlements. See p. 53.

[10]Paul Williams, AAR. Eighty percent is an average figure for all commodities included in TRAIN II; this percentage is probably higher for hazardous materials.

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EXHIBIT 4-1

TOP 25 HAZARDOUS COMMODITIES MOVEMENTS, BY CARLOAD, 1981

Hazardous Material	Carloads	Total Carloads
LPG	32,365	105,894
Propane	26,962	
Butane	10,556	
Butane	9,309	
Butadiene	7,414	
LPG	5,548	
Isobutane	5,369	
Isobutane	3,166	
Propylene	2,844	
LPG	2,345	
Sodium Hydroxide	37,178	65,172
" "	27,994	
TOFC/Forwarder/Shipper/COFC	32,119	57,532
" " " "	22,080	
" " " "	3,333	
Sulfuric Acid		42,911
Fuel Oil	25,495	40,750
" "	10,679	
" "	4,576	
Chlorine		37,918
Anhydrous Ammonia		37,126
Phosphoric Acid		23,991
Ammonium Nitrate		22,595
Methanol		20,063
Vinyl Chloride		18,773
Hydrochloric Acid		11,259
Crude Oil, Petroleum		9,650
Gasoline		9,563
Carbolic Acid or Phenol		6,943
Petroleum Distillate		6,485
Carbon Dioxide, Liquid		6,267
Adipic Acid		5,793
Hexamethylene Diamine Solutior		5,699
Styrene Monomer, Inhibited		5,591
Alcohol, n.o.s.		5,515
Acrylonitrile		5,318
Petroleum Naptha		5,225
Ethylene Oxide		5,038
Propylene Oxide		5,025
Total - Top 25		663,619
Grand Total - Hazardous Materials		827,303

Source: TRAIN II data base, AAR.

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Qualitative estimates of the volume of hazardous materials carried by truck range from 1 to 2 billion tons.[11] In order to determine the average volume per movement, a number of steps were needed. First, the frequency of transport of high-ranking hazardous materials by all modes of transport was used to project the composition of truck movements. According to available data, this frequency, expressed as a percent of movements, is as follows:[12]

Gasoline and jet fuels	56
Distillate fuel oil	34
Annhydrous ammonia	4
Liquid propane gas	2
Paints and allied products	2
Other	2
TOTAL	100

Having roughly identified the materials that are most frequently transported, a judgment was needed about the amount of liquid and solid hazardous materials moved by truck. This judgment was required because a recent study prepared for EPA found a statistically significant difference between the average volumes of hazardous wastes carried by truck as liquids and those carried in solid form.[13] Determining the volume of hazardous materials carried in different forms was needed, therefore, in order to apply the correct estimated average volume figures.

Fortunately, all but one category of hazardous materials ("Other") that are transported at a greater than 1 percent frequency can reasonably be classified as a liquid hazardous materials. Thus, approximately 98 percent of

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[11]Three estimates of this volume were obtained. A lower-bound estimate of 1 billion tons was provided by Sherwood Chu, DOT. Another estimate of 1.2 billion tons was created by multiplying 30 percent, or the fraction of total hazardous materials volume thought to be carried by truck, by the total estimated volume of hazardous materials traffic. (See footnote 7.) According to Alan Roberts, DOT estimates this total volume to be approximately 4 billion tons. An upper-bound estimate of 2 billion tons has been made by the American Automobile Association and is cited in Public Technology, Inc., Transportation of Hazardous Materials, Washington, D.C., September 1980.

[12]D.M. Baldwin, Regulations of the Movement of Hazardous Cargos, National Cooperative Highway Research Program, Draft Final Report, May 1980; cited in Transportation Research Board, Transportation of Hazardous Materials, p. 7.

[13]Dr. Mark Abkowitz, et. al., Assessing the Risks and Costs Associated with Truck Transport of Hazardous Wastes, Submitted to Office of Solid Waste, U.S. Environmental Protection Agency and ICF Incorporated under Work Assignment 10 of EPA Contract 68-01-6621, page E-13.

movements were determined to be transported as liquids. Because the overwhelming percentage of hazardous materials appear to be moved as liquids, estimates of liquid movements may approximate total movements. Total volume estimates were, however, reduced by 2 percent to reflect the relative contribution of liquid hazardous materials to total movements, which yielded estimates of the volume of hazardous materials moved in liquid form ranging from 0.98 billion tons to 1.96 billion tons.

A final transformation to the total volume estimates was needed; the available average volume statistics are expressed in gallons. As a result, the estimates of total volume were converted to gallons using the following factor: 6,000 gallons = 25 tons.[14] Applying this conversion equation provided estimates of total volume equalling 235 to 470 billion gallons.

One estimate of the average volume of movements of liquid hazardous materials by truck is approximately 3,128.4 gallons.[15] Dividing the two estimates of total volume by this figure leads to estimated movements of hazardous materials by truck of 73 to 146 million, resulting in annual revenue estimates of $731 to $1,460 million. Adding these figures to revenue estimates for railroad movements yields a total projection of $736 to $1,470 million, which corresponds with the estimates made under the first method.

4. ASSUMPTIONS

In addition to those assumptions mentioned in Section 3, the following additional assumptions have been incorporated into the revenue estimates:

- Movements of hazardous materials associated with U.S. imports and exports generally are not measured in the transportation data bases examined to construct revenue estimates. Hence, these movements were excluded from the estimates.

- No significant incentives are assumed to arise from the tax that would decrease the validity of the revenue estimates. For example, to minimize tax liability, there might be an incentive to minimize movements of hazardous materials. Although behavioral changes stemming from the tax cannot be quantified without a characterization of taxpayers (which is absent from the proposal), these incentives might include increasing the volume of each movement, reducing movements for storage, mixing and blending of hazardous materials, or otherwise reducing the number of shipments.

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[14]Source: Dr. Mark Abkowitz, et. al., Assessing the Risks and Costs Associated with Truck Transport of Hazardous Wastes, Submitted to Office of Solid Waste, U.S. Environmental Protection Agency and ICF Incorporated under Work Assignment 10 of EPA Contract 68-01-6621, page E-13. This conversion factor is based upon Resource Conservation and Recovery Act (RCRA) regulated wastes. Estimates of truck movements of hazardous materials presented in this section, therefore, should be considered illustrative.

[15]Dr. Mark Abkowitz, et. al., Assessing the Risks and Costs Associated with Truck Transport of Hazardous Wastes. The basis of this figure is a sample of transportation records of RCRA regulated wastes pooled for four states: Texas, California, Massachusetts, and New York. RCRA hazardous waste truck shipments are not necessarily representative of truck movements of DOT hazardous materials. Truck movement estimates presented here should therefore be considered illustrative.

APPENDIX J

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INFORMATION RELATED TO A CERCLA GROSS RECEIPTS TAX ON INDUSTRIES THAT PRODUCE OR USE HAZARDOUS SUBSTANCES FOUND AT NATIONAL PRIORITIES LIST WASTE SITES

GENERAL

- Over 400 hazardous substances have been found at sites nominated for NPL by states.

- Of the 100 most frequently found hazardous substances, 18 were not identified as specific compounds, e.g., zinc and compounds, cyanides, chlorinated hydrocarbons.

  -- These "generic" identifications could potentially include hundreds of specific compounds.

  -- Identifying producers or users of generically identified materials may be difficult or impossible due to lack of information.

- Many of the most frequently found hazardous substances have a large number of uses. As a result, identifying users of these substances could prove resource-intensive and could produce inaccurate results.

EQUITY

- There may be no relationship between a taxpayer's gross receipts and his contribution to releases of hazardous substances addressed by CERCLA.

- It may be impossible to design a system based on gross receipts to overcome this inequity. One way to attempt it would be to adjust percentage of gross receipts for various SIC groups based on the proportion of their revenues derived from production or use of hazardous substances.

ADMINISTRATIVE FEASIBILITY

- If tax is placed on gross receipts of producers of hazardous substances, system in effect extends feedstock approach to intermediates and final products of the chemical industry.

- Tax on users of hazardous substances could result in a very large number of taxpayers who could be difficult to identify positively.

- Any attempt to make system more equitable by adjusting tax rates will create additional administrative difficulties.

ABILITY TO PASS TAX THROUGH CHAIN OF COMMERCE

- Tax on producers of hazardous substances will hit more companies directly than feedstock tax and possibly result in wider tax distribution than feedstock tax.

- Tax on users of hazardous substances will distribute tax widely in a direct fashion.

APPENDIX K-1

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ANALYSIS OF OPTION 3 --
TAX ON CERTAIN IMPORTED SUBSTANCES

1. INTRODUCTION

Option 3 introduces a tax on imported substances immediately derived from feedstock and raw materials taxed by the current CERCLA tax or a variant on it such as Option 1. Presumably, the purpose of this tax on imports is to correct potential trade inequities domestic producers of chemical intermediates may face. Foreign producers of materials immediately derived from substances currently taxed under CERCLA use raw materials whose price has not been raised by the Superfund tax. Consequently, these foreign-produced intermediates may enjoy a price advantage over domestically-produced intermediates whose raw materials are taxed, when imported into the United States.

The tax rate for imported substances immediately derived from CERCLA taxed chemicals is five percent of their landed value. Alternatively, if taxpayers can establish the amount of CERCLA taxed chemicals used to produce the imported materials that Option 3 would tax, they may pay the amount of tax that would have been collected on the CERCLA taxed chemicals used to produce the imported materials instead of the five percent tax. Additionally, Option 3 taxpayers can receive a credit for taxes paid on feedstocks or raw materials taxed under the current system that were used to produce Option 3 taxable substances.

Nonferrous metals are given special treatment under Option 3. In general:

- The nonferrous metal content of any consumer product, with the possible exception of lead batteries[1] is not taxed;
- The nonferrous metal content of ores, concentrates, other pre-refined materials or transitory smelting intermediates is not taxed; and
- Previously taxed nonferrous metals in their current cycle of production and use are exempted from the Option 3 tax.

Finally, Option 3 refunds or credits the tax collected on all exports of feedstocks and raw materials that are currently taxed under CERCLA. Presumably, the purpose of this refund or credit is to remove the competitive trade disadvantage of taxable organic feedstocks and inorganic raw materials

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[1]The Commissioner of the Internal Revenue Service may establish rules for exempting the metal content of lead batteries from taxation under this option.

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exported from the U.S. to foreign markets. This provision in Option 3 results in a reduction in revenues which must be subtracted from the revenues produced by the tax on imported intermediates to determine the net revenue effect of Option 3.

2. ESTIMATED ANNUAL REVENUES

Preliminary analysis indicates that Option 3 would generate an estimated $55 million in tax revenues. This estimate does not take into account the tax exemptions proposed in Option 3, and thus represents the maximum revenue to be generated. The estimate is subject to a number of assumptions described in Section 4.

The revenue estimate is the net difference between the revenues generated by the proposed tax on imported derivatives of feedstocks and raw materials taxed under the current CERCLA tax, and the proposed credit or refund of taxes paid on CERCLA feedstocks and raw materials that are exported. Tax revenues from imports were estimated to be $72 million. Tax credits for exported feedstocks are estimated to be $17 million. Exhibit 3-1 presents a list of taxable substances imported in 1982, the dollar value of each, and the total dollar value of imports from which the estimate of tax revenues was derived. Exhibit 3-2 provides a list of U.S. exports of CERCLA taxed feedstocks in 1982 and an estimate of taxes paid based on the quantity exported. The latter represents the value of the tax credit proposed in Option 3.

3. METHODOLOGY

To estimate the tax revenue generated by the import tax proposed in Option 3, it was necessary to identify the chemicals and metals imported into the United States that would meet the specifications for taxation defined in Option 3.

The data on U.S. imports and exports of chemicals and metals were obtained from the U.S. Department of Commerce. 1982 data--the most readily available data obtainable within the time constraint--were used.

To simplify the identification of taxable substances, the following criteria were used:

- Chemicals designated as "immediately derived" from taxable feedstocks include substances derived directly, with no independent intermediate, from the chemicals listed in section 211 of CERCLA.

- Chemicals designated as "substantially derived" from taxable feedstocks are produced directly from an independent intermediate which is, in turn, produced directly from a chemical or chemicals listed in section 211 of CERCLA. These chemicals are designated as "substantially derived" because the final product is often produced in an enclosed process which starts with

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EXHIBIT 3-1

U.S. IMPORTS OF SUBSTANCES TAXABLE UNDER OPTION 3
(1982)

SUBSTANCES	CUSTOMS VALUE ($1,000's)
Immediately derived from listed feedstocks:	
Dimethylnaphthalenes	$ 1
Cumene	39,450
Phthalic anhydride	550
Styrene	5,986
Phenol[1]	2,188
Benzyl chloride	402
Benzotrichloride	35
Ortho di and trichlorobenzene	7
Chlorobenzenes, di and tri	825
p-Nitrotoluene acids	124
Nitrated naphthalene	153
p-Toluene sulfonyl chloride	1,051
2, Naphthol-3,6-disulfonic acid	230
Benzoic acid	880
Isophthalic acid	522
Terephthalic acid	0
Acetone	547
Cyclohexane	7,199
Maleic anhydride	507
Trinitrotoluene	698
Aluminum ammonium sulfate	637
Aluminum sulfate	2,901
Ammonium carbonate and bicarbonate	1,003
Ammonium molybdate	8,298
Ammonium nitrate	19,975
Ammonium phosphate (non-fertilizer)	1,002
Ammonium sulfate	54
Arsenic sulfide	9
Barium chloride	604
Barium hydroxide	2,429
Barium nitrate	186
Cobalt oxide	2,560
Cobalt sulfate	667
Mercuric chloride	106
Mercurous chloride	118
Nickel oxide	13,461
Nickel sulfate	1,295
Phosphorus oxychloride	47
Phosphorus trichloride	28
Potassium cyanide	1,175
Sodium chromate and dichromate	3,339
Sodium cyanide	7,204

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EXHIBIT 3-1 (Continued)

U.S. IMPORTS OF SUBSTANCES TAXABLE UNDER OPTION 3
(1982)

SUBSTANCES	CUSTOMS VALUE ($1,000's)
Immediately derived from listed feedstocks:	
Sodium sulfate	13,819
Hydrogen peroxide	1,732
Chromic acid	3,038
Acrylonitrile	2,207
Alanine	839
Mono, di, and triethanolamine	463
Ethylene diamine	3,211
Hexamethylene tetramine	352
Monochloroacetate	1,711
Acetaldehyde	6
Methyl ethyl ketone	11,247
Ethyl alcohol (for non-beverage use)	24,838
Ethyl alcohol (fuel use)	14,188
Isopropyl alcohol	16,229
Ethylene chlorohydrin	119
Ethylene glycol	7,509
Ethyl acrylate	514
Methyl acrylate	3,408
Vinyl acetate	1,514
Butylene oxide	2,218
Epichlorohydrin	1,139
Ethylene oxide	3,559
Propylene oxide	19,331
Vinyl ether	7
Carbon tetrachloride	254
Chloroform	3,337
Ethyl chloride	1,134
Ethylene & propylene dichloride	8,104
Methylene chloride	5,728
Vinyl chloride	6,308
Dicyclopentadiene	1,569
Polyethylene resins (low to medium density)	10,158
Polyethylene resins (high density)	11,477
Polypropylene	3,006
Polytetrafluoroethylene	16,417
Polybutadiene rubber	40,610
Polychloroprene	2,354
Ethylene-propylene rubber	386
Styrene-butadiene latex < 50% styrene	23,973
Styrene-butadiene rubber < 50% styrene	30,582
Styrene-butadiene NSPF > 50% styrene	11,714

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EXHIBIT 3-1 (Continued)

- U.S. IMPORTS OF SUBSTANCES TAXABLE UNDER OPTION 3
(1982)

SUBSTANCES	CUSTOMS VALUE ($1,000's)
Synthetic rubber not containing fillers	8,970
Master batches containing carbon black	932
Master batches, NSPF	2,450
Chrome green	96
Cobalt-60	8,201
Fumaric acid	73
Adipic acid	975
Ethylbenzene	NEG
Urea	173,259
Unwrought Nickel	446,850
Ferronickel	28,215
Ferrochromium NOV 3% carbon	21,699
Ferrochrome OV 3% carbon	55,796
Nickel waste and scrap	13,349
Nickel plate and sheet	970
Wrought nickel bars, not cold worked	379
Wrought nickel NSPF	3,086
Wrought nickel bars, cold worked	405
Nickels bars, plates, and wrought	99
Wrought nickel rods & wire not cold worked	5,772
Wrought nickel rods & wire cold worked	13,445
Wrought nickel angles & shapes	226
Nickel flakes	1,020
Nickel powders	71,825
Nickel pipes, tubes, not cold worked	889
Nickel pipes, tubes, cold worked	18,479
Nickel pipe & tubes fitting	320
Nickel electroplating anodes	71
Subtotal	$1,315,073
Substantially derived from Listed Feedstocks	
Monochloro nitrobenzenes	1,585
Nitrotoluene sulfonic acids	190
Benzoyl chloride	1,249
Terephthalic acid, dimethyl ester	2
Benzonitrile	133
Styrene-acrylonitrile resins	256
Polystyrene nomopolymer resins	688
Polystyrene resins & copolymers	4,445
Phenolic resins	10,718
Phenophthalein	450

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EXHIBIT 3-1 (Continued)

U.S. IMPORTS OF SUBSTANCES TAXABLE UNDER OPTION 3
(1982)

SUBSTANCES	CUSTOMS VALUE ($1,000's)
Melamine	8,650
Methyl alcohol (fuel use)	4,574
Propylene glycol	3,675
Acrylic and methacrylic acid resins	6,280
Acrylonitrile resins	621
Phenol (75% from cumene)[1]	6,564
Vinyl resins	8,855
Polyvinylchloride resins	11,477
Vinyl resins NSPF	3,754
Subtotal	$ 74,166
Lead-Acid batteries	54,080
TOTAL	$1,443,319

Calculation of maximum tax revenue:

$1,443,319 x 5% = $72,165,950

[1]Different amounts of imported phenol appear on both the "immediately derived" and "substantially derived" lists. The sum is the total of the imports with no double counting. The "immediately derived" phenol comes from oxidation of benzene, a CERCLA listed chemical, while the "substantially derived" portion is manufactured from cumene, which is a direct derivative of benzene.

Source: Bureau of the Census, U.S. Department of Commerce, U.S. Imports for Consumption and General Imports, FT 246, 1982.

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EXHIBIT 3-2
U.S. EXPORTS OF CERCLA-TAXED FEEDSTOCKS

TAXABLE CHEMICAL	Estimated Exported Quantity in 1982 (Tons Th)	Option 1 Tax Rate ($/Ton)	Estimated Tax Bill Collected on Exports ($ Th)
Aluminum phosphide	NA	1.53	0.0
Aluminum sulphate	NA	1.53	0.0
Aluminum chloride	NA	1.53	0.0
Ammonia	2.2	7.44	16.4
Antimony	0.3	14.94	4.5
Antimony trioxide	0.3	14.94	4.5
Arsenic	0.0	14.94	0.0
Arsenic trioxide	0.0	14.94	0.0
Asbestos	NA	13.92	0.0
Benzene	30.9	14.88	458.3
Benzene (derived from coal)	-	14.88	0.0
Benzene (gasoline use)	-	14.88	0.0
Boron trioxide	NA	14.94	0.0
Bromine	2.4	14.94	35.9
Butadiene	51.2	24.80	1,269.8
Butane	0.0	7.09	0.0
Butylene	NA	9.92	0.0
Cadmium	0.1	14.94	1.5
Chlorine	34.7	5.67	196.7
Chromite	8.2	2.55	20.9
Chromium	0.2	14.94	3.0
Coal-derived light oils	NA	10.93	0.0
Coal tars	NA	3.93	0.0
Cobalt	0.4	14.94	6.0
Cupric oxide	0.0	14.88	0.0
Cupric sulfate	0.0	14.88	0.0
Cuprous oxide	0.0	14.88	0.0
Ethylene	1.1	17.71	19.5
Hydrochloric acid	20.3	0.34	6.9
Hydrogen fluoride	0.0	14.94	0.0
Lead	NA	14.94	0.0
Lithium carbonate	NA	14.94	0.0
Manganese	NA	2.77	0.0
Mercury	0.4	14.94	6.0
Methane	0.0	2.48	0.0
Naphthalene	2.8	13.82	38.7
Naphthalene (derived from coal)	-	13.82	0.0
Nickel	37.9	14.94	566.2

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EXHIBIT 3-2
U.S. EXPORTS OF CERCLA-TAXED FEEDSTOCKS
(Continued)

TAXABLE CHEMICAL	Estimated Exported Quantity in 1982 (Tons Th)	Option 1 Tax Rate ($/Ton)	Estimated Tax Bill Collected on Exports ($ Th)
Nitric acid	0.0	0.28	0.0
Phosphoric acid	NA	0.30	0.0
Phosphorous	16.6	14.94	248.0
Potassium dichromate	0.1	14.94	1.5
Potassium hydroxide	6.7	0.26	1.7
Propylene	22.0	13.82	304.0
Selenium	NA	14.94	0.0
Sodium dichromate	15.4	14.94	230.1
Sodium hydroxide	810.6	0.33	267.5
Stannic chloride	0.0	14.94	0.0
Stannous chloride	0.0	14.94	0.0
Sulfuric acid	260.8	0.31	80.8
Toluene	80.4	12.75	1,025.1
Toluene (derived from coal)	-	12.75	0.0
Toluene (gasoline use)	-	12.75	0.0
Uranium oxide	NA	1.44	0.0
Vanadium	NA	2.48	0.0
Xylene	941.6	13.11	12,344.4
Xylene (derived from coal)	-	13.11	0.0
Xylene (gasoline use)	-	13.11	0.0
Zinc chloride	1.6	14.94	23.9
Zinc sulfate	1.0	14.94	14.9
TOTAL:	2,350.1	--	17,196.7

Source: Bureau of the Census. U.S. Department of Commerce.
U.S. Exports for Consumption and General Exports, FT446, 1982.

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the listed CERCLA feedstock chemical(s) and results in the final product after passing through an intermediate. It is also possible to start directly from the intermediate to produce these designated chemicals.

To estimate the value of the tax credit or refund of taxes paid on exported CERCLA feedstocks, a calculation was made based on actual exported tonnage and the tax rates proposed in Option 1. U.S. Department of Commerce data provided the necessary volume information.

4. ASSUMPTIONS

The Option 3 revenue estimate is subject to numerous assumptions, which can be grouped into three categories: (1) assumption concerning the value assigned to taxable imports, (2) assumptions concerning tax exemptions specified in Option 3, and (3) assumptions concerning the inclusion or exclusion of certain substances from the tax base.

Assumption Concerning the Value Assigned to Taxable Imports:

- The "landed value" used for this analysis was the customs value, which is defined as the price paid by the buyer to the seller. It does not include U.S. import duties freight, insurance and other charges in bring the merchandise to the United States.

Assumptions Concerning Tax Exemptions Specified in Option 3:

- The estimate represents the maximum revenue that may be generated by the proposed tax. The estimate will overstate the level of realized revenues by the total amount of the exemptions permitted in the proposal. These are defined in:

  -- Proposed Section 4663(c)(2)(B). Alternative Payment of Taxes Under Section 4661. (See Introduction for explanation.)

  -- Proposed Section 4663(c)(2)(C). Credit For Taxes Paid Under Section 4661. (See Introduction for explanation.)

  Because of the time limitation, no attempt was made to estimate the amount by which the exemptions will reduce the projection of maximum revenue.

- The proposed legislation states that "the Commissioner of Internal Revenue may establish reasonable de minimis levels for exempting from taxation the metal content of any such product or alloy". The import value of lead acid batteries in 1982 was $54,080,000. The total value was included in our estimate. No attempt was made to estimate the reduction in taxable value resulting from the exemption.

Assumptions Concerning the Inclusion or Exclusion of Certain Substances from the Tax Base:

- In the case of imported fumaric acid and alanine, an undetermined percent of the listed value is derived from a listed CERCLA chemical. More than one process is possible for manufacturing both of these chemicals, some of which do not involve a listed chemical. The total value is used in the calculation, resulting in an overestimate of the total value not exceeding $912,000.

- Accurate import values are not available for several categories of chemicals produced from CERCLA taxable chemicals. These chemicals are aggregated in the import data, and their relative percentage of the aggregate value is impossible to determine. These substances were not included in the tax base. Significant examples are:

  -- Amine adducts. These chemicals are formed primarily by the reaction of some chemical(s) with ammonia, a listed CERCLA taxable chemical. The amount of ammonia with respect to the other chemical(s) may be small.

  -- Surface action agents, or surfactants. Many of these chemicals are formed by reacting some chemical(s) with sulfuric acid or with sodium hydroxide. Data in imported surfactants are not broken down sufficiently to estimate the value of those produced in this way.

  -- Dyes and pharmaceuticals. Many of these chemicals require a listed chemical during one or more steps in their synthesis, though as with amine adducts the proportion may be small.

- Alloys containing small percentages, in most cases less than 5%, of nickel, chromium, or cobalt were not included. It is difficult to label these alloys "substantially or immediately derived" from these CERCLA taxable metals because their presence in the alloy is so small. The major alloy affected is stainless steel. Other heat resistant, high performance steels containing small amounts of nickel and chromium are also not listed. The import value of stainless steel powder, bars and slabs alone is $81,767,000.

- Export data on antimony, arsenic, cobalt, and chromium include unwrought metals, waste, and scrap and do not include alloys. Cadmium includes unwrought metal and does not include alloys or waste and scrap. Mercury does not include waste and scrap.

- Because of several important exemptions to the CERCLA tax for feedstocks used for specific purposes, the "true" levels of exports of feedstocks that are subject to the tax are probably less than the levels shown here. The exemptions include methane used as a fuel and ammonia used in the production of fertilizer. The data presented on methane and ammonia do not include quantities used for these purpose. Exemptions for butane used as a fuel; nitric acid, sulfuric acid, and methane used in the production of fertilizer; sulfuric acid produced as a by-product of air-pollution control; and chemicals derived from coal were not taken into account.

- Exports of acetylene and barium sulfide are not included in the analysis because volume data were not available.

5. LIMITATIONS

The estimate of revenue generated by Option 3 is subject to several limitations. First, the estimate is based on historic information for 1982. It is not a projection and does not take into account changes in price or volume in the tax base. To the extent that prices or volumes have changed since 1982, the estimate will differ from the true revenue-generating capacity of the proposed tax option. The second major limitation of the estimate is that it does not allow for any of the tax exemptions or alternate tax calculations specified in Option 3. The estimate represents the maximum revenue-generating capacity of the proposed tax and will overstate the true revenues by the amounts allowable for exemptions.

APPENDIX K-2

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ANALYSIS OF A TAX ON CERTAIN IMPORTED SUBSTANCES

1. INTRODUCTION

In its initial proposal of additional options for funding a reauthorized CERCLA, the Senate Environment and Public Works Committee Staff suggested a tax on imported substances derived from feedstock and raw materials taxed by the current CERCLA tax or a variant on it. The purpose of the tax on imports is to correct potential trade inequities domestic producers of chemical intermediates may face. Foreign producers of materials immediately derived from substances currently taxed under CERCLA use raw materials whose price has not been raised by a Superfund- like tax. Consequently, these foreign-produced intermediates may enjoy a price advantage over domestically-produced intermediates whose raw materials are taxed, when produced in or imported into the United States.

The import tax option that was originally proposed would be cumbersome to administer because of the large number of substances that would be eligible for taxation. To reduce the administrative burden of the tax option, the Senate Committee staff is investigating the possibility of limiting the tax base to eligible substances imported annually into the United States in quantities of 50,000 tons or more, and valued at $1,000,000 or greater. This refinement would reduce the list of taxable substances by approximately 80 percent to 12 substances.

All other aspects of the tax option remain the same as originally drafted. The tax rate for imported substances immediately or substantially derived from CERCLA taxed chemicals would be five percent of their landed value. If taxpayers could establish the amount of CERCLA taxed chemicals used to produce the imported materials that would be taxed, they would be permitted to pay the amount of tax that would have been collected on the CERCLA taxed chemicals used to produce the imported materials instead of the five percent tax because the intent of this tax option is to equalize the potential price advantage enjoyed by imported intermediates over intermediates produced domestically from taxed feedstocks. This option also proposes a tax credit for taxes paid on feedstocks or raw materials taxed under the current system that were used to produce taxable intermediates.

Nonferrous metals would be given special treatment under this option. In general:

- The nonferrous metal content of any consumer product, with the possible exception of lead batteries[1] would not be taxed;
- The nonferrous metal content of ores, concentrates, other pre-refined materials or transitory smelting intermediates would not be taxed; and

---

[1]The Commissioner of the Internal Revenue Service may establish rules for exempting the metal content of lead batteries from taxation under this option.

- Previously taxed nonferrous metals in their current cycle of production and use are exempted from the tax.

Finally, the import tax would allow a refund or credit of taxes collected on all exports of feedstocks and raw materials that are currently taxed under CERCLA in order to remove the competitive trade disadvantage of taxable organic feedstocks and inorganic raw materials exported from the U.S. to foreign markets. This provision results in a reduction in revenues that must be subtracted from the revenues produced by the tax on imported intermediates to determine the net revenue effect of the this tax otion.

2. ESTIMATED ANNUAL REVENUES

Preliminary analysis indicates that the tax would generate an estimated $13.5 million in tax revenues. This estimate does not take into account any of the proposed tax exemptions and therefore represents the maximum revenue to be generated. The estimate is subject to a number of assumptions described in Section 4.

The revenue estimate is the net difference between the revenues generated by the proposed tax on imported derivatives of feedstocks and raw materials taxed under the current CERCLA tax, and the proposed credit or refund of taxes paid on CERCLA feedstocks and raw materials that are exported. Tax revenues from imports were estimated to be $31.1 million. Tax credits for exported feedstocks were estimated to be $17.6 million. Exhibit 1 presents a list of taxable substances imported in 1983, the landed cost of each, and the total dollar value of imports from which the estimate of tax revenues was derived. Exhibit 2 provides a list of U.S. exports of CERCLA taxed feedstocks in 1983 and an estimate of taxes paid based on the quantity exported. The latter represents the value of the proposed export tax credit.

3. METHODOLOGY

To estimate the tax revenue generated by the import tax, it was necessary to identify the chemicals and metals imported into the United States that would meet the specifications for taxation.

The data on U.S. imports and exports of chemicals and metals were obtained from the U.S. Department of Commerce. 1983 data--the most readily available complete data--were used.

To simplify the identification of taxable substances, the following criteria were used:

- Chemicals designated as "immediately derived" from taxable feedstocks include substances derived directly, with no independent intermediate, from the chemicals listed in section 211 of CERCLA.

- Chemicals designated as "substantially derived" from taxable feedstocks are produced directly from an

EXHIBIT 1

U.S. IMPORTS OF SUBSTANCES TAXABLE UNDER PROPOSAL TO TAX IMPORTED DERIVATIVES (1983)

SUBSTANCES	CUSTOMS VALUE ($1,000's) (1983)
Immediately derived from listed feedstocks:	
Cumene	$ 46,054
Ammonium nitrate	18,808
Isopropyl alcohol	22,042
Vinyl chloride	18,076
Polybutadiene rubber	53,465
Styrene-butadiene rubber and latex	66,671
Polyethylene resins	40,807
Ferronickel	60,694
Ferrochrome OV 3% carbon	93,738
Ethyl alcohol	101,584
Subtotal	$ 521,939
Substantially derived from Listed Feedstocks:	
Polyvinylchloride resins	53,738
Subtotal	53,738
Lead-Acid batteries	47,150
TOTAL	$ 622,827

Calculation of maximum tax revenue:

$622,827 x 5% = $31,141,350

Source: Bureau of the Census, U.S. Department of Commerce, U.S. Imports for Consumption and General Imports, FT 246, 1983.

EXHIBIT 2

U.S. EXPORTS OF CERCLA-TAXED FEEDSTOCKS

Taxable Chemical	Estimated Exported Quantity in 1983 (Tons Th)	Modified Feedstock Tax Rate ($/Ton)	Estimated Tax Bill Collected on Exports ($ Th)
Aluminum phosphide	N/A	1.53	0.0
Aluminum sulphate	15.5	1.53	23.7
Aluminum chloride	N/A	1.53	0.0
Ammonia	2.7	7.44	20.1
Antimony	0.0	14.94	0.0
Antimony trioxide	0.0	14.94	0.0
Arsenic	0.0	14.94	0.0
Arsenic trioxide	0.0	14.94	0.0
Asbestos	0.0	13.92	0.0
Benzene	40.2	14.88	598.2
Benzene (derived from coal)	--	14.88	0.0
Benzene (gasoline use)	--	14.88	0.0
Boron trioxide	--	14.94	0.0
Bromine	N/A	14.94	0.0
Butadiene	48.3	24.80	1197.8
Butane	0.9	7.09	0.0
Butylene	6.2	9.92	61.5
Cadmium	0.2	14.94	3.0
Chlorine	63.8	5.67	361.7
Chromite	11.0	2.55	28.1
Chromium	0.2	14.94	3.0
Coal-derived light oils	N/A	10.93	0.0
Coal tars	5.4	3.93	21.2
Cobalt	0.5	14.94	7.5
Cupric oxide	0.0	14.88	0.0
Cuprice sulfate	0.0	14.88	0.0
Cuprous oxide	0.0	14.88	0.0
Ethylene	0.3	17.71	5.3
Hydrochloric acid	13.7	0.34	4.7
Hydrogen fluoride	0.0	14.94	0.0
Lead	71.1	14.94	1062.2
Lithium carbonate	8.9	14.94	133.0
Manganese	53.1	2.77	147.1

EXHIBIT 2 (Continued)

U.S. EXPORTS OF CERCLA-TAXED FEEDSTOCKS

Taxable Chemical	Estimated Exported Quantity in 1983 (Tons Th)	Modified Feedstock Tax Rate ($/Ton)	Estimated Tax Bill Collected on Exports ($ Th)
Mercury	0.0	14.94	0.0
Methane	0.0	2.48	0.0
Naphthalene	6.7	13.82	92.6
Naphthalene (derived from coal)	N/A	13.82	0.0
Nickel	36.2	14.94	540.8
Nitric acid	0.0	0.28	0.0
Phosphoric acid	0.0	0.28	0.2
Phosphorous	0.7	0.30	448.2
Potassium dichromate	30.0	14.94	3.0
Potassium hydroxide	7.5	0.26	2.0
Propylene	28.2	0.28	0.0
Selenium	0.1	14.94	1.5
Sodium dichromate	14.2	14.94	212.1
Sodium hydroxide	954.0	0.33	314.8
Stannic chloride	0.0	14.94	0.0
Stannous chloride	0.0	14.94	0.0
Sulfuric acid	321.2	0.31	99.6
Toluene	128.0	12.75	1632.0
Toluene (derived from coal)	N/A	12.75	0.0
Toluene (gasoline use)	N/A	12.75	0.0
Uranium oxide	0.6	1.44	0.8
Vanadium	N/A	2.48	0.0
Xylenes	772.0	13.11	10,120.1
Xylene (derived from coal)	N/A	13.11	0.0
Xylene (gasoline use)	N/A	13.11	0.0
Zinc chloride	1.1	14.94	16.4
Zinc sulfate	2.3	14.94	34.4
TOTAL	2,645.0		17,586.3

Source: Bureau of the Census, U.S. Department of Commerce, U.S. Exports for Consumption and General Exports, FT 446, 1983.

independent intermediate which is, in turn, produced directly from a chemical or chemicals listed in section 211 of CERCLA. These chemicals are designated as "substantially derived" because the final product is often produced in an enclosed process which starts with the listed CERCLA feedstock chemical(s) and results in the final product after passing through an intermediate. It is also possible to start directly from the intermediate to produce these designated chemicals.

To estimate the value of the tax credit or refund of taxes paid on exported CERCLA feedstocks, a calculation was made based on actual exported tonnage and the tax rates proposed in Senate Committee staff tax Option 1. U.S. Department of Commerce data provided the necessary volume information.

4. ASSUMPTIONS

The revenue estimate for the import tax option is subject to numerous assumptions, which can be grouped into three categories: (1) assumptions concerning the value assigned to taxable imports, (2) assumptions concerning tax exemptions, and (3) assumptions concerning the inclusion or exclusion of certain substances from the tax base.

Assumptions Concerning the Value Assigned to Taxable Imports:

- The "landed value" used for this analysis was the customs value, which is defined as the price paid by the buyer to the seller. It does not include U.S. import duties freight, insurance, and other charges in bring the merchandise to the United States.

Assumptions Concerning Tax Exemptions:

- The estimate represents the maximum revenue that may be generated by the proposed tax. The estimate will overstate the level of realized revenues by the total amount of the exemptions permitted in the proposal. These are defined in:

  -- Proposed Section 4663(c)(2)(B). Alternative Payment of Taxes Under Section 4661. (See Introduction for explanation.)

  -- Proposed Section 4663(c)(2)(C). Credit For Taxes Paid Under Section 4661. (See Introduction for explanation.)

  Because of the time limitation of this analysis, no attempt was made to estimate the amount by which exemptions will reduce the projection of maximum revenue.

- The proposed legislation states that "the Commissioner of Internal Revenue may establish reasonable de minimis levels for exempting from taxation the metal content of any such product or alloy". The import value of lead acid batteries in 1983 was $47.2 million. The total value was included in our estimate. No attempt was made to estimate the reduction in taxable value resulting from the exemption.

Assumptions Concerning the Inclusion or Exclusion of Certain Substances from the Tax Base:

- Accurate import values are not available for several categories of chemicals produced from CERCLA taxable chemicals. These chemicals are aggregated in the import data, and their relative percentage of the aggregate value is impossible to determine. These substances were not included in the tax base. Significant examples are:

  -- Amine adducts. These chemicals are formed primarily by the reaction of some chemical(s) with ammonia, a listed CERCLA taxable chemical. The amount of ammonia with respect to the other chemical(s) may be small.

  -- Surface action agents, or surfactants. Many of these chemicals are formed by reacting some chemical(s) with sulfuric acid or with sodium hydroxide. Data on imported surfactants are not broken down sufficiently to estimate the value of those produced in this way.

  -- Dyes and pharmaceuticals. Many of these chemicals require a listed chemical during one or more steps in their synthesis, though as with amine adducts the proportion may be small.

- Alloys containing small percentages, in most cases less than 5%, of nickel, chromium, or cobalt were not included. It is difficult to label these alloys "substantially or immediately derived" from these CERCLA taxable metals because their presence in the alloy is so small. The major alloy affected is stainless steel. Other heat resistant, high performance steels containing small amounts of nickel and chromium are also not listed. The import value of stainless steel powder, bars, and slabs alone is $66.5 million.

- Export data on antimony, arsenic, cobalt, and chromium include unwrought metals, waste, and scrap and do not include alloys. Cadmium includes unwrought metal and does not include alloys or waste and scrap. Mercury does not include waste and scrap.

- Because of several important exemptions to the CERCLA tax for feedstocks used for specific purposes, the "true" levels of exports of feedstocks that are subject to the tax are probably less than the levels shown here. The exemptions include methane used as a fuel and ammonia used in the production of fertilizer. The data presented on methane and ammonia do not include quantities used for these purpose. Exemptions for butane used as a fuel; nitric acid, sulfuric acid, and methane used in the production of fertilizer; sulfuric acid produced as a by-product of air-pollution control; and chemicals derived from coal were not taken into account.

- Exports of aluminum phosphide, aluminum chloride, acetylene and barium sulfide are not included in the analysis because volume data were not available.

- The styrene-butadiene rubber and latex value is the combination of three categories: styrene-butadiene latex < 50% styrene, styrene-butadiene rubber < 50% styrene, and styrene-butadiene NSPF > 50% styrene. The import data separates these substances because styrene content and immediate end-uses vary slightly among the categories. The categories are combined in this analysis because their chemical compositions are nearly identical. In addition, only the combination of the three categories satisfies the 50,000 ton threshold mentioned above.

5. LIMITATIONS

The estimate of revenue generated by the import tax option is subject to several limitations. First, the estimate is based on historic information for 1983. It is not a projection and does not take into account changes in price or volume in the tax base. To the extent that prices or volumes will change from the 1983 level, the estimate will differ from the true revenue-generating capacity of the proposed tax option. The second major limitation of the estimate is that it does not allow for any of the prescribed tax exemptions or the alternate tax calculation. The estimate represents the maximum revenue-generating capacity of the proposed tax and will overstate the true revenues by the amounts allowable for exemptions.

6. GATT IMPLICATIONS

The United States participates in the General Agreement on Tariffs and Trade (GATT), which was established in 1948 to promote favorable trading conditions among participating nations. Contracting parties to the GATT have agreed to a negotiated schedule of tariff concessions and undertake among themselves to refrain from anti-competitive trading policies. The Senate tax option under review may have GATT implications because it proposes a new tax on imported intermediate products produced from feedstocks that would be taxable under CERCLA and a refund of the CERCLA tax on feedstocks that are exported. The following discussion presents a brief and very preliminary analysis of the GATT implications of the proposed tax on imported derivatives.

The proposed CERCLA tax on the importation of substances derived from taxable chemicals would increase the cost of affected imports and reduce their competitiveness in the U.S. market. Although the tax would not change the negotiated tariff on these products, the price effects -- changes in the relative competitiveness of the products -- could raise a potential GATT concern. The fundamental GATT principle that deals with this problem is the principle of "national treatment," which is described in the GATT as follows:

> The contracting parties recognize that internal taxes and other internal charges, and laws, regulations and requirements affecting the internal sale, offering for sale, purchase, transportation, distribution or use of products, and internal quantitative regulations requiring the mixture, processing or use of products in specified amounts or proportions, should not be applied to imported or domestic products so as to afford protection to domestic production.

> The products of the territory of any contracting party imported into the territory of any other contracting party shall not be subject, directly or indirectly, to internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products. Moreover, no contracting party shall otherwise apply internal taxes or other internal charges to imported or domestic products in a manner contrary to the principles set forth in paragraph 1.[1]

The GATT further states that:

> Nothing in this Article shall prevent any contracting party from imposing at any time on the importation of any product:
>
> (a) a charge equivalent to an internal tax imposed consistently with the provisions of paragraph 2 of Article III in respect of the like domestic product or in respect of an article from which the imported product has been manufactured or produced in whole in part.[2]

Since the intent of the proposed tax on imported intermediates is to duplicate the effect of the feedstock tax on like-products that are produced domestically, it would not appear to violate the terms of GATT. Although the rate structure calls for a 5% tax on the landed value of these products -- a somewhat different tax treatment than is accorded to domestic products -- the importer has the option of paying the amount that would be owed on the feedstock component of the intermediate, if that amount can be established. Accordingly, the proposed tax would not appear to treat imports differently from domestic production. Since the existing CERCLA tax and proposed modifications apply to chemical feedstocks and the proposed import tax is applied to products that are derived from feedstocks, this conclusion presumes that the cost of the feedstock tax is completely passed through to the intermediate.

The second GATT issue concerns the refund of the CERCLA feedstock tax paid on chemicals that are exported. Article XVI of the GATT prohibits export subsidies, which are broadly defined to include some forms of differential tax treatment of exported products relative to equivalent products sold domestically. Whether the proposed treatment of exported feedstocks constitutes a GATT violation depends on whether the CERCLA tax is determined to be an excise tax or a social welfare tax. It would appear that the GATT

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[1]General Agreement On Tariffs and Trade, Volume IV, Article III, paragraphs 1 and 2.

[2]General Agreement on Tariffs and Trade, Volume IV, Article III, paragraph 2.

permits the exemption or refund of excise taxes payable on exported products as long as the exemption or refund is not in excess of the amount of tax that was paid. On the other hand, the GATT appears to prohibit similar treatment of social welfare charges. This distinction is implicitly made in an illustrative list of prohibited export subsidies that appears in the Agreement on Interpretation and Application of Articles VI, XVI, and XXIII of the General Agreement on Tariffs and Trade negotiated under section 102 of the Trade Act of 1974[3], which provides the following examples:

> The full or partial exemption, remission, or deferral specifically related to exports, of direct taxes or social welfare charges paid or payable by industrial or commercial enterprises.
>
> The exemption or remission in respect of the production and distribution of exported products, of indirect taxes in excess of those levied in respect of the production and distribution of like products when sold for domestic consumption.

At the present time, the CERCLA tax is treated as an excise tax by the Internal Revenue Service. Accordingly, it would appear that refunding of the CERCLA paid on exported chemical feedstocks would not constitute a GATT violation.

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[3]House Document No. 96-153, Part I. 96th Congress, 1st Session, p. 293.

HEARINGS

The Committee held eight days of hearings, one of which was a field hearing held at Trenton, N.J. Testimony was taken from representatives of Federal, State, and local government agencies, environmental and business groups, the medical profession, the academic community, and private individuals.

ROLLCALL VOTES

Section 7(b) of rule XXVI of the Standing Rules of the Senate and the rules of the Committee on Environment and Public Works require that any rollcall votes taken during consideration of this bill be announced in this report.

During the Committee's consideration of S. 2892, there were three rollcall votes taken. Each of these votes was publicly announced during the open meetings of the Committee. The tabulation of these votes are on file with the Committee.

The bill was ordered reported by voice vote. Voting to report the bill were Senators Stafford, Baker, Chafee, Simpson, Abdnor, Domenici, Durenberger, Humphrey, Evans, Randolph, Bentsen, Burdick, Hart, Moynihan, Mitchell, Baucus, and Lautenberg. Voting in the negative was Senator Symms.

COST OF LEGISLATION

Section 403 of the Congressional Budget and Impoundment Control Act requires each bill to contain a statement of the cost of such bill prepared by the Congressional Budget Office. That report follows:

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, September 20, 1984.

Hon. ROBERT T. STAFFORD,
Chairman, Committee on Environment and Public Works,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has reviewed S. 2892, the Superfund Amendments of 1984, as ordered reported by the Senate Committee on Environment and Public Works, September 13, 1984.

S. 2892 would reauthorize, amend, and expand Public Law 96-510, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The bill would provide for changes in the tax schedules on certain petroleum and chemical feedstocks, but does not specify any new rates or substances. The authority to collect these new taxes would be extended to September 30, 1990, with total collections under the new tax provisions not to exceed $6.47 billion. For fiscal years 1986 through 1990, the bill would authorize general fund appropriations of $206 million annually to the Hazardous Substance Response Trust Fund (Superfund), plus any amounts previously authorized but not appropriated.

S. 2892 would also create a victim assistance demonstration program in five selected states, funded by up to $30 million annually from the Superfund. In addition, at least $18 million for fiscal year 1985—and in subsequent years, the lesser of $50 million or 5 per-

cent of annual appropriations from the Superfund—would be made available to the Agency for Toxic Substances and Disease Registry for health-related activities. The bill would also permit Superfund money to be used to provide alternative water supplies in any case involving groundwater contamination from federal hazardous waste sites.

Because the bill as reported by the Senate Committee on Environment and Public Works does not specify new tax provisions, its budget impact is uncertain. Consequently, we have projected the budget effects under two alternative assumptions: (1) that the tax rates are set so as to produce the $6.47 billion maximum additional revenues specified in the bill by September 30, 1990; and (2) that current tax rates remain in effect through September 30, 1990. The following table summarizes the budget impact of the bill under the first assumption, with new revenues set to total $6.47 billion by 1990.

ALTERNATIVE I: TAX RATES ARE SET TO PRODUCE AN ADDITIONAL $6.47 BILLION BY 1990

[By fiscal years, in millions of dollars]

	1986	1987	1988	1989	1990
Section 2:					
Estimated authorization level	1,550	1,500	1,500	1,500	1,500
Estimated outlays	470	840	1,140	1,360	1,510
Section 3:					
Estimated revenues:					
Receipts from crude oil and feedstock taxes	1,290	1,290	1,290	1,290	1,290
Less: Income tax offset	320	320	320	320	320
Net revenues	970	970	970	970	970
Total budget impact:					
Estimated revenues	970	970	970	970	970
Estimated outlays	470	840	1,140	1,360	1,510
Estimated increase (+) or decrease (−) in deficit	−500	−130	170	390	540

The above estimate assumes that any new tax provisions would become effective beginning in fiscal year 1986.

Alternatively, if we assume that the current tax rates are extended until 1990, the federal impact would be as follows:

ALTERNATIVE II: CURRENT TAX RATES REMAIN IN EFFECT THROUGH 1990

[By fiscal years, in millions of dollars]

	1986	1987	1988	1989	1990
Section 2:					
Estimated authorization level	541	497	508	518	528
Estimated outlays	162	284	384	463	519
Section 3:					
Estimated revenues:					
Receipts from crude oil and feedstock taxes	281	291	302	312	322
Less: Income tax offset	70	73	76	78	81
Net revenues	211	218	226	234	241

ALTERNATIVE II: CURRENT TAX RATES REMAIN IN EFFECT THROUGH 1990—Continued

[By fiscal years, in millions of dollars]

	1986	1987	1988	1989	1990
Total budget impact:					
Estimated revenues	211	218	226	234	241
Estimated outlays	162	284	384	463	519
Estimated increase (+) of decrease (−) in deficit	−49	66	158	229	278

A number of provisions of S. 2892 would affect the budgets of state governments. The bill would amend Section 104 of the 1980 Act by expanding the state credit provisions and by allowing states to apply so-called window period (i.e., January 1, 1978 through December 11, 1980) retroactive credits to any eligible site within the state. Based upon information from the EPA, we estimate that the application of the retroactive credit provision will result in a $40 million credit to the states. The bill also expands the categories of expenses that a state may count towards its share of remedial action costs, thus allowing states to recoup some of their administrative and other costs.

In addition, S. 2892 clarifies the definition of remedial action by including in it up to the first five years of groundwater treatment. The effect of this provision is to reduce potential costs to states, which must pay for only a portion of remedial actions but 100 percent of long-term operating and maintenance costs. The potential benefit could be substantial but is difficult to quantify. A rough estimate of savings to the states would be about $200 million over five years, based on information from the EPA. This provision is not expected to result in any new retroactive credits or refunds to states, since it appears that none are currently paying for remedial groundwater treatment at any Superfund site.

Finally, this bill would effectively repeal the provision of current law that preempts state taxing authority. This provision would enable states to impose any type of taxes necessary for purposes of recouping certain categories of state clean-up costs and related expenses.

If you wish further details on this estimate, we will be pleased to provide them.

Sincerely,

ERIC HANUSHEK
(For Rudolph G. Penner, Director).

EVALUATION OF REGULATORY IMPACT

In compliance with the requirements of paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee has evaluated the regulatory impact of the legislation.

The bill does not change, to any significant extent, the number or groups or classes of individuals or activities presently subject to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. Some provisions would have minimal regulatory impacts.

Section 104 requires that remedial action be selected according to certain specified criteria. This will require some regulatory and other amplification.

Section 111 requires that the Administrator promulgate amendments to the National Contingency Plan to (1) implement the requirements of this Act and (2) promulgate amendments to the Hazard Ranking System. Neither is expected to create any significant regulatory burdens.

ADDITIONAL VIEWS OF SENATORS SIMPSON AND SYMMS

Funding Levels

This bill purports to be a "bare-bones" extension of Superfund, However, the Committee has actually reported a bill that does not reflect the level of funding authority that represents the level that EPA can reasonably spend. Instead of $7.5 billion it would have been appropriate for the Committee to have followed the recommendation of Lee Thomas, Assistant Administrator for Solid Waste and Emergency Response, that funding over a five year period should be near $5.2 billion— or more appropriate still for the Committee to have funded the Superfund program for one year at $1 billion in order to keep the program going until the extensive reports required of EPA can be completed, distributed, and analyzed by Congress.

The growth of the Superfund program in terms of dollars spent by EPA has been almost exponential, EPA is now doing a credible job of cleaning up waste sites and is spending money in a responsible and effective manner. It is imperative that Congress not choke down EPA's efforts by forcing it to spend money that cannot be used effectively. I know that is difficult to imagine in this city! EPA needs to continue what it is mandated to do under Superfund—clean up waste sites—and infusions of unnecessary funding create administrative problems that will only inhibit clean up efforts in the long run.

It has been argued that EPA may need more money to fund victims assistance programs or various health studies that Congress may required. Congress should realize that EPA's prime mandate is to clean up waste sites, not to provide health studies, and other services to the American public. The protection of the public health is, and should be the prime consideration under Superfund, but medical welfare programs should not be funded because of horror stories, emotional rhetoric and exaggerated statements about true needs. Such programs may be needed in very limited instances where scientific cause and effect relationships can be adequately demonstrated, but for now the cleaning up of sites is the most important thing we can do, and will prevent the need for such programs in the future.

Victim Assistance Demonstration Program

Anything that is described as a program to assist victims of misfortune, especially if it is a "demonstration" program, is tough to resist, both politically and personally. We all want to help people who are suffering through no fault of their own. The temptation is to surrender to our generous impulses and commit the taxpayer's money to programs with such laudable purposes without asking

possibly embarrassing questions, such as: It this truly a responsibility of the Federal government? What is the magnitude of the problem and how large a financial commitment will be necessary to solve it? Is it fair and equitable to single out this particular group for federal benefits? What will be the unintended effects of this program on both the public and private sectors? Is this optimum use of resources, or would it do society more good in the long run to expend the money in a different way?

Unfortunately, in the case of this "victim assistance" program, the tough questions have scarcely been considered, much less answered satisfactorily, and there is no reason to believe they will ever be answered before it is too late to turn back if we have made a mistake. This program would be a "demonstration" program in name only. One minor but revealing indication of that fact is the total absence of any requirement that this program be studied or evaluated. No reports to Congress would be required. There is nothing that calls for the program to be subjected to any critical scrutiny. Curious indeed for a "demonstration" program.

When the specifics of this proposal are examined it immediately becomes apparent that what is contemplated is a "demonstration" of enormous and unprecedented size. A victim's assistance program would be set up in five states. The criteria upon which they are to be selected would strongly favor the selection of the largest states. In all likelihood at least 25 percent and possibly as much as 35 percent of the population of the entire United States would be covered. Under the program the states would essentially serve as a conduit for federal funds. They would have very little discretion with regard to the content of the program.

Essentially what would be created is an entitlement program. The states would identify population groups within which there is reason to believe that some members of the group either have or may in the future develop an illness as a result of an exposure to a hazardous substance (which, of course, is something medical science can very rarely do). *Everyone* in the group would then be eligible for burial benefits, health insurance, and disability insurance. The burial benefits would be available only when death is "reasonably related" to exposure to a hazardous substance. The health and disability benefits, however, would extend to all disabilities and diseases. In other words, if a health study shows that there are twenty cases of a rare cancer in a population of ten thousand—instead of the ten deaths that would ordinarily occur—and this increased incidence is linked to exposure of low levels of a hazardous substance, not only would everyone who has the cancer get Federal health and disability insurance, but all ten thousand people would receive it, and the insurance would cover medical expenses and disabilities associated with everything from heart disease to gangrene. I don't think that sounds reasonable.

In theory the cost of this program could not exceed $30,000,000 a year and it would terminate after five years, but can any committee member truly believe that once these large numbers of people begin to receive benefits and come to rely upon them that we are ever going to simply "cut them off?" For that matter, once we provide Federal benefits to someone with an illness who happens to

live near a dumpsite, how are we going to be able to deny the same benefits to someone living across town who has the same illness?

As it is now structured, this program, which sounds so very appealing, is the opening wedge for an entitlements program that could easily dwarf the "black lung" benefits program and the medical benefits for veterans, in addition to proving that we have learned absolutely nothing from our experience in those areas.

Difficult as it may be to accept, the actual truth is that we just do not yet know enough about the causal connection between hazardous waste and illness in the general population to embark on a program of this kind—and when we eventually understand the medical and scientific connection sufficiently to assign "the blame" we will probably determine that a much more narrowly targeted program is appropriate.

For the present we should devote our efforts to the cleaning up of hazardous wastes—from which this program would surely divert resources—and to supporting various efforts to understand the problem.

ALAN K. SIMPSON.
STEVE SYMMS.

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ADDTIONAL VIEWS OF SENATOR LAUTENBERG

The Chairman and Ranking Minority Member of the Committee have exercised vital leadership in securing nearly unanimous committee approval of S. 2892. I hope the Senate will make consideration of this bill a high priority before the 98th Congress adjourns.

The importance of an expanded an accelerated Superfund program cannot be understated. Citizens who live in continual fear of contaminated groundwater, air and soil from abandoned waste sites deserve to have this program implemented as quickly and effectively as possible. The sheer magnitude of the task, and the need for the Environmental Protection Agency and the states to make mangerial and financial commitments without a loss of continuity, requires that the Superfund program be reauthorized well before it expires in October, 1985.

In the interest of assuring timely action on S. 2892, the committee considered a five year, $7.5 billion reauthorization of current programs. Members of the committee were provided with the opportunity to offer amendments, and several were adopted that will improve the existing Superfund program. To facilitate committee consideration of S. 2892, however, several important issues were not considered. I hope the Senate will be able to address them when it considers S. 2892.

S. 2892 does not address the pace of the program. Superfund sites are being added to the National Priority List at an astounding rate. Currently, there are 546 sites on the NPL. Over the next several years, the Environomental Protection Agency expects the list to grow to 1,400 to 2,200 sites. Every effort should be made to ensure that EPA has adequate resources to initiate cleanups and that it do so as quickly as possible. This may require an increase in funding and direction about the pace at which sites are added to the NPL and the speed with which remedial investigations/feasibility studies and remedial actions are undertaken.

Another issue related to the cleanup of sites is the determination of "How clean is clean". The Committee gave this issue considerable attention. It resolved that the agency or state carrying out a remedial action should be provided with flexibility in determining how much should be cleaned up. S. 2892 requires that the degree of cleanup always meets the test of protection of human health and the environment. It is my view that removal of hazardous substances, pollutants, or contaminants should be the preferred method of cleanup unless compelling evidence indicates another solution better serves the public health and environment.

The Superfund program must be responsive to the citizens that live in the vicinity of an abandoned waste site or site of a release under the Act. Citizens should have the opportunity to petition EPA if a release or the threat of a release poses imminent and substantial endangerment to human health or the environment and

also to petition EPA to carry out non-discretionary duties under the Act. Citizen suit provisions under other environmental statutes have made programs more responsive to the public and have generally improved Agency regulation and enforcement of such laws.

FRANK R. LAUTENBERG.

MINORITY VIEWS OF SENATOR SYMMS

The Congress has seldom seen a fast-tracked legislative effort that could rival this year's Superfund reauthorization efforts. The House of Representatives passed a bill through their authorizing Committees so quickly that when floor action finally commenced, there was a tremendous backlash by Members to the bill's extreme provisions. In this Committee, final drafts of amendments were distributed to Senators only moments before they were adopted.

In fact, this bill has moved so quickly that we have not had a real opportunity to ask why it is necessary to reauthorize Superfund this Congress. As a Member of this Committee, I expressed concerns that this effort be fueled by substance and not politics. It is evident that it was politics that motivated the House's furious action. The Senate, on the other hand, improved on the House's action, but still acted without the benefit of important information about the impacts of their bill on the economic and international trade fronts. Consider the following facts:

(1) The Superfund and the taxes it imposes do not expire until September 30, 1985.

(2) When the Superfund program was established, it established a well thought-out timetable for reauthorization. These include a comprehensive report to assess the current operation and future needs of the Superfund program that is due at the end of this year. Any reauthorization now circumvents that timetable.

(3) EPA's Superfund Task Force found that, with the exception of post-closure liabilities, that the current Superfund contains no "major deficiencies" requiring legislative changes.

(4) EPA has expanded its activity under Superfund, and is doing an excellent job in its implementation. The Agency has amassed an impressive clean-up effort, and virtually every site on the National Priority List is receiving the Agency's attention. Those efforts will go on whether Congress acts this year or not.

(5) In addition, EPA has stated that it has enough money coming into the fund to finance its expanded activity, and that it would be unable to spend over $1 billion per year efficiently and effectively.

(6) On the day the Committee reported this legislation, the Office of Technology Assessment provided me with a report I had requested analyzing the financing impacts of reauthorizing Superfund. The report found that the House-passed bill would:

(1) raise and spend money that EPA cannot efficiently allocate, spend or otherwise use over the period;

(b) have extemely adverse impacts on industry, and therefore, employment;

(c) make the problem of assessing the international trade impacts of a tax on an expanded list of chemicals a formidable task; and

(d) generally not solve or adequately address the serious chemical waste problems this country faces.

Looking at these facts, it's astounding that this Congress would even attempt this very controversial reauthorization during its waning moments with so many pressing economic issues at hand.

The House bill to a great degree, and the Senate bill to a lesser, but still substantive degree, will pose a very harsh economic threat to this nation's economy and to its trade stability. Yet, if the EPA is correct, their program of clean-up won't be much different next year whether we reauthorize Superfund today or act next year.

My Colleague Senator Simpson appeared to have an answer to both issues in the form of an excellent compromise that was unfortunately rejected by the Committee. It would have raised the funding for Superfund to $1 billion until its expiration next year. The amendment would have ensured legislative action next Congress, and yet increased the fund over that same period to a level equal to that which EPA has called the maximum annual expenditure it could be expected to make efficiently and effectively.

In summary, I have serious concerns about a broad and sweeping reauthorization of Superfund this year, and the impacts of such an action on this nation's ability to operate domestically and to compete abroad. I strongly urge the Congress to take a step back, and to address this issue when we have the benefits of the upcoming studies and the time to give the financing mechanisms and the regulatory program thorough deliberation.

STEVE SYMMS.

CHANGES IN EXISTING LAW

In compliance with section 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill as reported are shown as follows: Existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman:

PUBLIC LAW 96-510 96TH CONGRESS

AN ACT To provide for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment and the cleanup of inactive hazardous waste disposal sites

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Comprehensive Environmental Response, Compensation, and Liability Act of 1980".

TITLE I—HAZARDOUS SUBSTANCES RELEASES, LIABILITY, COMPENSATION

DEFINITIONS

SEC. 101. For purpose of this title, the term—

* * * * * * *

(16) "natural resources" means land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, apper-

taining to, or otherwise controlled by the United States (including the resources of the fishery conservation zone established by the Fishery Conservation and Management Act of 1976), any State or local government, [or] any foreign government, *any Indian tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian tribe;*

* * * * * * *

(30) "territorial sea" and "contigous zone" shall have the meaning provided in section 502 of the Federal Water Pollution Control Act[.];

(31) "national contingency plan" means the national contingency plan published under section 311(c) of the Federal Water Pollution Control Act or revised pursuant to section 105 of this Act; [and]

(32) "liable" or "liability" under this title shall be construed to be the standard of liability which obtains under section 311 of the Federal Water Pollution Control Act[.];

(33) "Indian tribe" means any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village but not including any Alaska Native regional or village corporation, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians; and

(34) "alternative water supplies" includes, but is not limited to, drinking water and household water supplies.

* * * * * * *

RESPONSE AUTHORITIES

SEC. 104. (a)(1) * * *

* * * * * * *

(c)(1) * * *

* * * * * * *

(3) The President shall not provide any remedial actions pursuant to this section unless the State in which the release occurs first enters into a contract or cooperative agreement with the President providing assurances deemed adequate by the President that (A) the State will assure all future maintenance of the removal and remedial actions provided for the expected life of such actions as determined by the President; (B) the State will assure the availability of a hazardous waste disposal facility acceptable to the President and in compliance with the requirements of subtitle C of the Solid Waste Disposal Act for any necessary offsite storage, destruction, treatment, or secure disposition of the hazardous substances, and (C) the State will pay or assure payment of (i) 10 per centum of the costs of the remedial action, including all future maintenance, or (ii) at least 50 per centum or such greater amount as the President may determine appropriate, taking into account the degree of responsibility of the State or political subdivision, of any sums expended in response to a release at a facility that was owned at the time of any disposal of hazardous substances therein by the State or a political subdivision thereof. [The President shall grant the

State a credit against the share of the costs for which it is responsible under this paragraph for any documented direct out-of-pocket non-Federal funds expended or obligated by the State or a political subdivision thereof after January 1, 1978, and before the date of enactment of this Act for cost-eligible response actions and claims for damages compensable under section 111 of this title relating to the specific release in question: *Provided, however,* That in no event shall the amount of the credit granted exceed the total response costs relating to the release.] *In determining the portion of the costs referred to in this section which is required to be paid by a participating State, the President shall grant the State a credit for amounts expended or obligated by such State or by a political subdivision thereof after January 1, 1978 and before December 11, 1980, for any response action costs which are covered by section 111(a) (1) or (2) and which were incurred at a facility or release listed pursuant to section 105(8). Such credit shall have the effect of reducing the amount which the State would otherwise be required to pay in connection with assistance under this section. The President shall grant the State a credit against the share of costs for which it is responsible under this paragraph for any reasonable, documented, direct out-of-pocket non-Federal funds expended or obligated by the State under a cooperative or contract agreement under the last sentence of subsection (d)(1). In the case of remedial action to be taken on land or water held by an Indian tribe, held by the United States in trust for Indians, held by a member of an Indian tribe if such land or water is subject to a trust restriction on alienation, or otherwise within the borders of an Indian reservation, the requirements of this paragraph for assurances regarding future maintenance and cost-sharing shall not apply, and the President shall provide the assurance required by this paragraph regarding the availability of a hazardous waste disposal facility.*

[(4) The President shall select appropriate remedial actions determined to be necessary to carry out this section which are to the extent practicable in accordance with the national contingency plan and which provide for that cost-effective response which provides a balance between the need for protection of public health and welfare and the environment at the facility under consideration, and the availability of amounts from the Fund established under title II of this Act to respond to other sites which present or may present a threat to public health or welfare or the environment, taking into consideration the need for immediate action.]

(4)(A) The President shall select appropriate remedial actions determined to be necessary to carry out this section which, to the extent practicable, are in accordance with the national contingency plan and which provide for cost-effective response. In evaluating the cost-effectiveness of proposed alternative remedial actions, the President shall take into account the total short- and long-term costs of such actions, including the costs of operations and maintenance for the entire period during which such activities will be required.

(B) Remedial actions in which treatment which significantly reduces the volume, toxicity or mobility of the hazardous substances is a principal element, are to be preferred over remedial actions not involving such treatment. The offsite transport and disposal of hazardous substances or contaminated materials without such treat-

ment should be the least favored alternative remedial action, where practicable treatment technologies are available.

(C) Remedial actions selected under this paragraph or otherwise required or agreed to by the President under this Act shall attain a degree of cleanup of hazardous substances, pollutants and contaminants from the environment and of control of further release at a minimum which assures protection of human health and the environment. Such remedial actions shall be relevant and appropriate under the circumstances presented by the release or threatened release of such substance, pollutant, or contaminant.

(D) No permit shall be required under subtitle C of the Solid Waste Disposal Act for the portion of any removal or remedial action conducted pursuant to this Act entirely onsite: Provided, That any onsite treatment, storage, or disposal of hazardous substances, pollutants or contaminants shall comply with the requirements of subparagraph (C).

(E) Subject to the requirements of this paragraph, the President, shall select the appropriate remedial action which provides a balance between the need for protection of public health and welfare and the environment at the facility under consideration, and the availability of amounts from the Fund to respond to other sites which present or may present a threat to public health or welfare or the environment, taking into consideration the relative immediacy of such threats.

(5) For the purposes of paragraph (3) of this subsection, in the case of ground or surface water contamination, completed remedial action includes the completion of treatment or other measures, whether taken onsite or offsite, necessary to restore ground and surface water quality to a level that assures protection of human health and the environment. With respect to such measures, the operation of such measures for a period up to five years after construction or installation and commencement of operation shall be considered remedial action. Activities required to maintain the effectiveness of such measures following such period or the completion of remedial action, whichever is earlier, shall be considered operation or maintenance.

(6) During any period after the availability of funds received by the Trust Fund under sections 4611 and 4661 of the Internal Revenue Code of 1954 or section 221(b)(2) of this Act, the Federal share of the payment of costs for operation and maintenance pursuant to paragraph (3)(C)(i) or paragraph (5) of this subsection shall be from funds received by the Trust Fund under section 221(b)(1)(B).

(7) Effective four years after the date of enactment of this paragraph, the President shall not provide any remedial actions pursuant to this section unless the State in which the release occurs first enters into a contract or cooperative agreement with the President providing assurances deemed adequate by the President that the State will assure the availability of hazardous waste treatment or disposal facilities acceptable to the President and in compliance with the requirements of subtitle C of the Solid Waste Disposal Act with adequate capacity for the destruction, treatment, or secure disposition of all hazardous wastes that are reasonably expected to be generated within the State during the 20-year period following the

date of such contract or cooperative agreement and to be disposed of, treated, or destroyed.

[(d)(1) Where the President determines that a State or political subdivision thereof has the capability to carry out any or all of the actions authorized in this section, the President may, in his discretion, enter into a contract or cooperative agreement with such State or political subdivision to take such actions in accordance with criteria and priorities established pursuant to section 105(8) of this title and to be reimbursed for the reasonable response costs thereof from the Fund. Any contract made hereunder shall be subject to the cost-sharing provisions of subsection (c) of this section.]

(d)(1) Where the President determines that a State or political subdivision has the capability to carry out any or all of the actions authorized in this section, the President may, in his discretion, enter into a contract or cooperative agreement and combine any existing cooperative agreements with such State or political subdivision or Indian tribe to take such actions in accordance with criteria and priorities established pursuant to Section 105(8) of this title and to be reimbursed from the Fund for the reasonable response costs and related activities associated with the overall implementation, coordination, enforcement, training, community relations, site inventory and assessment efforts, and administration of remedial activities authorized by this Act. Any contract made hereunder shall be subject to the cost-sharing provisions of subsection (c) of this section. For the purposes of the last sentence of subsection (c)(3) of this section, the President may enter into a contract or cooperative agreement with a State under this paragraph under which such State will take response actions in connection with releases listed pursuant to section 105(8)(B), using non-Federal funds for such response actions, in advance of and without any obligation by the President of amounts from the Fund for such response actions.

(2) If the President enters into a cost-sharing agreement pursuant to subsection (c) of this section or a contract or cooperative agreement pursuant to this subsection, and the State or political subdivision thereof *or Indian tribe* fails to comply with any requirements of the contract, the President may, after providing sixty days notice, seek in the appropriate Federal district court to enforce the contract or to recover any funds advanced or any costs incurred because of the breach of the contract by the State or political subdivision *or Indian tribe.*

(3) Where a State or a political subdivision thereof *or Indian tribe* is acting in behalf of the President, the President is authorized to provide technical and legal assistance in the administration and enforcement of any contract or subcontract in connection with response actions assisted under this title, and to intervene in any civil action involving the enforcement of such contract or subcontract.

* * * * * * *

(i)*(1)* There is hereby established within the Public Health Service an agency, to be known as the Agency for Toxic Substances and Disease Registry, which shall report directly to the [Surgeon General of the United States] *the Secretary of Health and Human Services.* The Administrator of said Agency *(hereinafter in this sub-*

section referred to as the "Administrator") shall, with the cooperation of the Administrator of the Environmental Protection Agency, the Commissioner of the Food and Drug Administration, the Directors of the National Institute of Medicine, National Institute of Environmental Health Sciences, National Institute of Occupational Safety and Health, Centers for Disease Control. the Administrator of the Occupational Safety and Health Administration, and the Administrator of the Social Security Administration, effectuate and implement the health related authorities of this Act. In addition, said Administrator shall—

[(1)] *(A)* in cooperation with the States, establish and maintain a national registry of serious diseases and illnesses and a national registry of persons exposed to toxic substances;

[(2)] *(B)* establish and maintain inventory of literature, research, and studies on the health effects of toxic substances;

[(3)] *(C)* in cooperation with the States, and other agencies of the Federal Government, establish and maintain a complete listing of areas closed to the public or otherwise restricted in use because of toxic substance contamination;

[(4)] *(D)* in cases of public health emergencies caused or believed to be caused by exposure to toxic substances, provide medical care and testing to exposed individuals, including but not limited to tissue sampling, [chromosomal testing,] *appropriate testing,* epidemiological studies, or any other assistance appropriate under the circumstances; and

[(5)] *(E)* either independently or as part of other health status survey, conduct periodic survey and screening programs to determine relationships between exposure to toxic substances and illness. In cases of public health emergencies, exposed persons shall be eligible for admission to hospitals and other facilities and services operated or provided by the Public Health Service.

(2) The Agency for Toxic Substances and Disease Registry shall provide consultations upon request on health issues relating to exposure to hazardous or toxic substances, on the basis of available information, to the Environmental Protection Agency, State officials, and local officials. Such consultations, to individuals may be provided by States under cooperative agreements established under this Act.

(3)(A) The Administrator shall perform a health assessment for each release or threatened release or facility on the National Priority List established under section 105. Such health assessment shall be completed not later than two years after the date of enactment of the Superfund Amendments of 1984 for each release or threatened release or facility proposed for inclusion on such list prior to such date of enactment or not later than one year after the date of proposal for inclusion on such list for each release or threatened release or facility proposed for inclusion on such list after such date of enactment. The Administrator shall also perform a health assessment for each facility for which one is required under section 3005(j) of the Solid Waste Disposal Act and, upon request of the Administrator of the Environmental Protection Agency or a State, for each facility subject to this Act or subtitle C of the Solid Waste Disposal

Act, where there is sufficient data as to what hazardous substances are present in such facility.

(B) The Administrator may perform health assessments for releases or facilities where individual persons or licensed physicians provide information that individuals have been exposed to a hazardous substance, for which the probable source of such exposure is a release. In addition to other methods (formal or informal) of providing such information, such individual persons or licensed physicians may submit a petition to the Administrator providing such information and requesting a health assessment. If such a petition is submitted and the Administrator does not initiate a health assessment, the Administrator shall provide a written explanation of why a health assessment is not appropriate.

(C) In determining sites at which to conduct health assessments under this paragraph, the Administrator of the Agency for Toxic Substances and Disease Registry shall give priority to those facilities or sites at which there is documented evidence of release of hazardous substances, at which the potential risk to human health appears highest, and for which in the judgment of the Administrator of such Agency existing health assessment data is inadequate to assess the potential risk to human health as provided in subparagraph (E).

(D) Any State or political subdivision carrying out an assessment shall report the results of the assessment to the Administrator of such Agency, and shall include recommendations with respect to further activities which need to be carried out under this section. This Administrator of such Agency shall include the same recommendation in a report on the results of any assessment carried out directly by the Agency, and shall issue periodic reports which include the results of all the assessments carried out under this paragraph.

(E) For the purposes of this subsection and section 111(c)(4), the term 'health assessments' shall include preliminary assessments of the potential risk to human health posed by individual sites and facilities, based on such factors as the nature and extent of contamination, the existence of potential for pathways of human exposure (including ground or surface water contamination, air emissions, and food chain contamination), the size and potential susceptibility of the community within the likely pathways of exposure, the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified contaminants and any available recommended exposure or tolerance limits for such contaminants, and the comparison of existing morbidity and mortality data on diseases that may be associated with the observed levels of exposure. The assessment shall include an evaluation of the risks to the potentially affected population from all sources of such contaminants, including known point or nonpoint sources other than the site or facility in question. A purpose of such preliminary assessments shall be to help determine whether full-scale health or epidemiological studies and medical evaluations of exposed populations shall be undertaken.

(F) At the completion of each health assessment the Administrator shall provide the Administrator of the Environmental Protection Agency and each affected State with the results of such assessment,

together with any recommendations for further action under this subsection or otherwise under this Act.

(G) In any case in which a health assessment performed under this paragraph (including one required by section 3005(j) of the Solid Waste Disposal Act) discloses the exposure of a population to the release of a hazardous substance, the costs of such health assessment may be recovered as a cost of response under section 107 of this Act from persons causing or contributing to such release of such hazardous substance or, in the case of multiple releases contributing to such exposure, to all such releases.

(4) Whenever in the judgment of the Administrator, it is appropriate on the basis of the results of a health assessment, the Administrator shall conduct a pilot study of health effects for selected groups of exposed individuals, in order to determine the desirability of conducting full scale epidemiological or other health studies in the entire exposed population. Whenever in the judgment of the Administrator it is appropriate on the basis of the results of such pilot study, the Administrator shall conduct such full scale epidemiological or other health studies as may be necessary to determine the health effects for the population exposed to hazardous substances in a release or suspected release.

(5) In any case in which the results of a health assessment indicate a potential significant risk to human health, the Administrator shall consider whether the establishment of a registry of exposed persons would contribute to accomplishing the purposes of this subsection, taking into account circumstances bearing on the usefulness of such a registry, including the seriousness or unique character of identified disease or the likelihood of population migrating from the affected area.

(6) The Administrator shall conduct a sudy, and report to the Congress within two years after the date of enactment of the Superfund Amendments of 1984, on the usefulness, costs, and potential implications of medical surveillance programs as a part of the health studies authorized by this section. Such study shall include, at a minimum, programs which identify diseases for which an exposed population is at excess risk, provide periodic medical testing to screen for such diseases in subgroups of the exposed population at highest risk, and provide for a mechanism to refer for treatment individuals who are diagnosed as having such diseases.

(7) If a health assessment or other study carried out under this subsection contains a finding that the exposure concerned presents a significant risk to human health, the President shall take such steps as may be necessary to reduce such exposure and eliminate or substantially mitigate the significant risk to human health. Such steps may include the use of any authority under this Act, including, but not limited to—

(1) provision of alternative water supplies, and

(2) permanent or temporary relocation of individuals.

(8) In any case which is the subject of a petition, a health assessment or study, or a research program under this subsection, nothing in this subsection shall be construed to delay or otherwise affect or impair the authority of the President or the Administrator of the Environmental Protection Agency to exercise any authority vested in the President or such Administrator under any other provision of

law (including, but not limited, to the imminent hazard authority of section 7003 of the Solid Waste Disposal Act) or the response and abatement authorities of this Act.

(9)(A) The Administrator shall, within six months after the date of enactment of the Superfund Amendments of 1984, prepare a list of at least one hundred hazardous substances which the Administrator, in his sole discretion, determines are those posing the most significant potential threat to human health due to their common presence at the location of responses under section 104 or at facilities on the National Priority List or in releases to which a response under section 104 is under consideration. Within twenty-four months after enactment, the Administrator shall prepare a list of an additional one hundred or more such hazardous substances. The Administrator shall not less often than once every year thereafter add to such list other substances which are frequently so found or otherwise pose a potentially significant threat to human health by reason of their physical, chemical, or biological nature.

(B) For each such hazardous substance listed pursuant to subparagraph (A), the Administrator shall assess whether adequate information on the health effects of such substance is available. For any such substance for which adequate information is not available (or under development), the Administrator shall assure the initiation of a program of research designed to determine the health effects (and techniques for development of methods to determine such health effects) of such substance. Where feasible, such program shall seek to develop methods to determine the health effects of such substance in combination with other substances with which it is commonly found. Such program shall include, but not be limited to—

(i) laboratory and other studies to determine short, intermediate, and long-term health effects;

(ii) laboratory and other studies to determine organ-specific, site-specific, and system-specific acute and chronic toxicity;

(iii) laboratory and other studies to determine the manner in which such substances are metabolized or to otherwise develop an understanding of the biokinetics of such substances; and

(iv) where there is a possibility of obtaining human data, the collection of such information.

(C) In assessing the need to perform laboratory and other studies, as required by subparagraph (B), the Administrator shall consider—

(i) the availability and quality of existing test data concerning the substance on the suspected health effect in question;

(ii) the extent to which testing already in progress will, in a timely fashion, provide data that will be adequate to support the preparation of toxicological profiles as required by subparagraph (F) of this paragraph; and

(iii) such other scientific and technical factors as the Administrator may determine are necessary for the effective implementation of this subsection.

(D) In the development and implementation of any research program under this paragraph, the Administrator of the Agency for Toxic Substances and Disease Registry and the Administrator of the Environmental Protection Agency shall coordinate such research program implemented under this paragraph with programs of toxi-

cological testing established under the Toxic Substances Control Act and the Federal Insecticide, Fungicide and Rodenticide Act. The purpose of such coordination shall be to avoid duplication of effort and to assure that the hazardous substances listed pursuant to this subsection are tested thoroughly at the earliest practicable date. Where appropriate in the discretion of the Administrator and consistent with such purpose, a research program under this paragraph may be carried out using such programs of toxicological testing.

(E) It is the sense of the Congress that the costs of research programs under this paragraph be borne by the manufacturers of the hazardous substance in question, as required in programs of toxicological testing under the Toxic Substances Control Act. Where this is not practical, the costs of such research programs should be borne by parties responsible for the release of the hazardous substance in question. To carry out such intention, the costs of conducting such a research program under this paragraph shall be deemed a cost of response for the purposes of recovery under section 107 of such costs from a party responsible for a release of such hazardous substance.

(F) Based on all available information, including data developed and collected on the health effects of hazardous substances under this paragraph, the Administrator shall prepare toxicological profiles sufficient to establish the likely effect on human health of each of the substances listed pursuant to subparagraph (A). Such profiles shall be revised and republished as necessary, but no less often than once every five years. Such profiles shall be provided to the States and made available to other interested parties.

(10) All studies and results of research conducted under this subsection (other than health assessments) shall be reported or adopted only after appropriate peer review. Such peer review shall be conducted by panels consisting of no less than three nor more than seven members, who shall be disinterested scientific experts selected for such purpose by the Administrator on the basis of their reputation for scientific objectivity and the lack of institutional ties with any person involved in the conduct of the study or research under review. Support services for such panels shall be provided by the Agency for Toxic Substances and Disease Registry.

(11) In the implementation of this subsection and other health-related authorities of this Act, the Administrator is authorized to establish a program for the education of physicians and other health professionals on methods of diagnosis and treatment of injury or disease related to exposure to toxic substances, through such means as the Administrator deems appropriate. Not later than one year after the date of enactment of the Superfund Amendments of 1984, the Administrator shall report to the Congress on the implementation of this paragraph.

(12) For the purpose of implementing this subsection and other health-related authorities of this Act, the President shall provide adequate personnel to the Agency for Toxic Substances and Disease Registry, which shall be no fewer than one hundred full time equivalent employees.

(13) The activities described in this subsection and section 111(c)(4) shall be carried out by the Agency for Toxic Substances and Disease Registry established by paragraph (1), either directly, or through cooperative agreements with States (or political subdivi-

sions thereof) in the case of States (or political subdivisions) which the Administrator of such Agency determines are capable of carrying out such activities. Such activities shall include the provision of consultations on health information, and the conduct of heath assessments, including those required under section 3005(j) of the Solid Waste Disposal Act, health studies and registries.

(j) Before selection of appropriate remedial action to be undertaken by the United States or a State or before entering into a covenant not to sue or to forbear from suit or otherwise settle or dispose of a claim arising under this Act, notice of such proposed action and an opportunity for a public meeting in the affected area, as well as a reasonable opportunity to comment, shall be afforded to the public prior to final adoption or entry. Notice shall be accompanied by a discussion and analysis sufficient to provide a reasonable explanation of the proposal and alternative proposals considered.

(k) In determining priorities among releases and threatened releases under the National Contingency Plan and in carrying out remedial action under this section, the Administrator shall establish a high priority for the acquistion of all properties (including non-owner occupied residential, commercial, public, religious, and vacant properties) in the area in which, before May 22, 1980, the President determined an emergency to exist because of the release of hazardous substances and in which owner occupied residences have been acquired pursuant to such determination.

NATIONAL CONTINGENCY PLAN

SEC. 105. *(a)* Within one hundred and eighty days after the enactment of this Act, the President shall, after notice and opportunity for public comments, revise and republish the national contingency plan for the removal of oil and hazardous substances, originally prepared and published pursuant to section 311 of the Federal Water Pollution Control Act, to reflect and effectuate the responsibilities and powers created by this Act, in addition to those matters specified in section 311(c)(2). Such revision shall include a section of the plan to be known as the national hazardous substance response plan which shall establish procedures and standards for responding to releases of hazardous substances, pollutants, and contaminants, which shall include at a minimum:

(1) methods for discovering and investigating facilities at which hazardous substances have been disposed of or otherwise come to be located;

(2) methods for evaluating, including analyses of relative cost, and remedying any releases or threats of releases from facilities which pose substantial danger to the public health or the environment;

(3) methods and criteria for determining the appropriate extent of removal, remedy, and other measures authorized by this Act;

(4) appropriate roles and responsibilities for the Federal, State, and local governments and for interstate and nongovernmental entities in effectuating the plan;

(5) provision for identification, procurement, maintenance, and storage of response equipment and supplies;

(6) a method for and assignment of responsibility for reporting the existence of such facilities which may be located on federally owned or controlled properties and any releases of hazardous substances from such facilities;

(7) means of assuring that remedial action measures are cost-effective over the period of potential exposure to the hazardous substances or contaminated materials;

(8)(A) criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable taking into account the potential urgency of such action, for the purpose of taking removal action. Criteria and priorities under this paragraph shall be based upon relative risk or danger to public health or welfare or the environment, in the judgment of the President, taking into account to the extent possible the population at risk, the hazard potential of the hazardous substances at such facilities, the potential for contamination of drinking water supplies, the potential for direct human contact, the potential for destruction of sensitive ecosystems, State preparedness to assume State costs and responsibilities, and other appropriate factors;

(B) based upon the criteria set forth in subparagraph (A) of this paragraph, the President shall list as part of the plan national priorities among the known releases or threatened releases throughout the United States and shall revise the list no less often than annually. Within one year after the date of enactment of this Act, and annually thereafter, each State shall establish and submit for consideration by the President priorities for remedial action among known releases and potential releases in that State based upon the criteria set forth in subparagraph (A) of this paragraph. In assembling or revising the national list, the President shall consider any priorities established by the States. To the extent practicable, at least four hundred of the highest priorities facilities shall be designated individually and shall be referred to as the "top priority among known response targets", and, to the extent practicable, shall include among the one hundred highest priorities facilities at least one such facility from each State which shall be the facility designated by the State as presenting the greatest danger to public health or welfare or the environment among the known facilities in such State. Other priority facilities or incidents may be listed singly or grouped for response priority purposes; and

(9) specified roles for private organizations and entities in preparation for response and in responding to releases of hazardous substances, including identification of appropriate qualifications and capacity therefor.

The plan shall specify procedures, techniques, materials, equipment, and methods to be employed in identifying, removing, or remedying releases of hazardous substances comparable to those required under section 311(c)(2)(F) and (G) and (j)(1) of the Federal Water Polution Control Act. Following publication of the revised national contingency plan, the response to and actions to minimize damage from hazardous substances releases shall, to the greatest

extent possible, be in accordance with the provisions of the plan. The President may, from time to time, revise and republish the national contingency plan.

(b) Not later than twelve months after the date of enactment of the Superfund Amendments of 1984, the President shall revise the National Contingency Plan to reflect the requirements of such amendments. The portion of such Plan known as the "the National Hazardous Substance Response Plan" shall be revised to provide procedures and standards for remedial actions undertaken pursuant to this Act which are consistent with amendments made by the Superfund Amendments of 1984 relating to the selection of remedial action.

(c) Not later than twelve months after the date of enactment of the Superfund Amendments of 1984 and after publication of notice and opportunity for submission of comments in accordance with section 553 of title 5, United States Code, the President shall by rule promulgate amendments to the hazard ranking system in effect on September 1, 1984. Such amendments shall assure, to the maximum extent feasible, that the hazard ranking system accurately assesses the relative degree of risk to human health and the environment posed by sites and facilities subject to review. The President shall establish an effective date for the amended hazard ranking system which is not later than eighteen months after the date of enactment of the Superfund Amendments of 1984 and such amended hazard ranking system shall be applied to any site or facility to be newly listed on the National Priority List after the effective date established by the President. Until such effective date of the regulations, the hazard ranking system in effect on September 1, 1984, shall continue in full force and effect.

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LIABILITY

SEC. 107. (a) Notwithstanding any other provision or rule of law, and subject only to the defenses set forth in subsection (b) of this section—

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(4) any person who accepts or accepted any hazardous substances for transport to disposal or treatment facilities or sites selected by such person, from which there is a release, or a threatened release which causes the incurrence of response costs, of a hazardous substance, shall be liable for—

(A) all costs of removal or remedial action incurred by the United States Government or a State *or an Indian tribe* not inconsistent with the national contingency plan;

(B) any other necessary costs of response incurred by any other person consistent with the national contingency plan; and

(C) damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing

such injury, destruction, or loss resulting from such a release.

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(d)*(1)* No person shall be liable under this title for damages as a result of actions taken or omitted in the course of rendering care, assistance, or advice in accordance with the national contingency plan or at the direction of an onscene coordinator appointed under such plan, with respect to an incident creating a danger to public health or welfare or the environment as a result of any release of a hazardous substance or the threat thereof. This subsection shall not preclude liability for damages as the result of gross negligence or intentional misconduct on the part of such person. For the purposes of the preceding sentence, reckless, willful, or wanton misconduct shall constitute gross negligence.

(2) No State or local government shall be liable under this title for costs or damages as a result of nonnegligent actions taken in response to any emergency created by the release of a hazardous substance, pollutant, or contaminant generated by or from a facility owned by another person.

(e)(1) No indemnification, hold harmless, or similar agreement or conveyance shall be effective to transfer from the owner or operator of any vessel or facility or from any person who may be liable for a release or threat of release under this section, to any other person the liability imposed under this section. Nothing in this subsection shall bar any agreement to insure, hold harmless, or indemnify a party to such agreement for any liability under this section.

(2) The Administrator may, in contracting or arranging for response action to be undertaken under this Act, agree to hold harmless and indemnify a contracting party against claims, including the expenses of litigation or settlement, by third persons for death, bodily injury or loss of or damage to property arising out of performance of a cleanup agreement to the extent that such claim does not arise out of the negligence of the contracting party.

[(2)**]** *(3)* Nothing in this title, including the provisions of paragraph (1) of this subsection, shall bar a cause of action that an owner or operator or any other person subject to liability under this section, or a guarantor, has or would have, by reason of subrogation or otherwise against any person.

(f) In the case of an injury to, destruction of, or loss of natural resources under subparagraph (C) of subsection (a) liability shall be to the United States Government and to any State for natural resources within the State or belonging to, managed by, controlled by, or appertaining to such State *and to any Indian tribe for natural resources belonging to, managed by, controlled by, or appertaining to such tribe, or held in trust for the benefit of such tribe, or belonging to a member of such tribe if such resources are subject to a trust restriction on alienation. Provided, however,* That no liability to the United States or State *or Indian tribe* shall be imposed under subparagraph (C) of subsection (a), where the party sought to be charged has demonstrated that the damages to natural resources complained of were specifically identified as an irreversible and irretrievable commitment of natural resources in an environmental impact statement, or other comparable environment analy-

sis, and the decision to grant a permit or license authorizes such commitment of natural resources, and the facility or project was otherwise operating within the terms of its permit or license, *so long as, in the case of damages to an Indian tribe occurring pursuant to a Federal permit or license, the issuance of that permit or license was not inconsistent with the fiduciary duty of the United States with respect to such Indian tribe.* The President, or the authorized representative of any State, shall act on behalf of the public as trustee of such natural resources to recover for such damages. Sums recovered shall be available for use to restore, rehabilitate, or acquire the equivalent of such natural resources by the appropriate agencies of the Federal Government or the State government *or the Indian tribe*, but the measure of such damages shall not be limited by the sums which can be used to restore or replace such resources. There shall be no recovery under the authority of subparagraph (C) of subsection (a) where such damages and the release of a hazardous substance from which such damages resulted have occurred wholly before the enactment of this Act.

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(i) No person (including the United States or any State *or Indian tribe*) may recover under the authority of this section for any response costs or damages resulting from the application of a pesticide product registered under the Federal Insecticide, Fungicide, and Rodenticide Act. Nothing in this paragraph shall affect or modify in any way the obligations or liability of any person under any other provision of State or Federal law, including common law, for damages, injury, or loss resulting from a release of any hazardous substance or for removal or remedial action or the costs of removal or remedial action of such hazardous substance.

(j) Recovery by any person (including the United States or any State *or Indian tribe*) for response costs or damages resulting from a federally permitted release shall be pursuant to existing law in lieu of this section. Nothing in this paragraph shall affect or modify in any way the obligations or liability of any person under any other provision of State or Federal law, including common law, for damages, injury, or loss resulting from a release of any hazardous substance or for removal or remedial action or the costs of removal or remedial action of such hazardous substance. In addition, costs of response incurred by the Federal Government in connection with a discharge specified in section 101(10) (B) or (C) shall be recoverable in an action brought under section 309(b) of the Clean Water Act.

* * * * * * *

USES OF FUND

SEC. 111. (a) * * *

(b) Claims asserted and compensable but unsatisfied under provisions of section 311 of the Clean Water Act, which are modified by section 304 of this Act may be asserted against the Fund under this title; and other claims resulting from a release or threat of release of a hazardous substance from a vessel or a facility may be asserted against the Fund under this title for injury to, or destruction or

loss of, natural resources, including cost for damage assessment: *Provided, however,* That any such claim may be asserted only by the President, as trustee, for natural resources over which the United States has sovereign rights, or natural resources within the territory or the fishery conservation zone of the United States to the extent they are managed or protected by the United States, or by any State for natural resources within the boundary of that State belonging to, managed by, controlled by, or appertaining to the State, *or by any Indian tribe or by the United States acting on behalf of any Indian tribe for natural resources belonging to, managed by, controlled by, or appertaining to such tribe, or held in trust for the benefit of such tribe, or belonging to a member of such tribe if such resources are subject to a trust restriction on alienation.*

(c) Uses of the Fund under subsection (a) of this section include—

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(2) the costs of Federal or State *or Indian tribe* efforts in the restoration, rehabilitation, or replacement or acquiring the equivalent of any natural resources injured, destroyed, or lost as a result of a release of a hazardous substance;

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(4) *in accordance with subsection (m) of this section and section 104(i),* the costs of [epidemiologic studies,] *epidemiologic and laboratory studies and health assessments,* development and maintenance of a registry of persons exposed to hazardous substances to allow long-term health effect studies, and diagnostic services not otherwise available to determine whether persons in populations exposed to hazardous substances in connection with a release or a suspected release are suffering from long-latency diseases;

(5) subject to such amounts as are provided in appropriation Acts, the costs of providing equipment and similar overhead, related to the purposes of this Act and section 311 of the Clean Water Act, and needed to supplement equipment and services available through contractors or other non-Federal entities, and of establishing and maintaining damage assessment capability, for any Federal agency involved in strike forces, emergency task forces, or other response teams under the national contingency plan; [and]

(6) subject to such amounts as are provided in appropriation Acts, the costs of a program to protect the health and safety of employees involved in response to hazardous substance releases. Such program shall be developed jointly by the Environmental Protection Agency, the Occupational Safety and Health Administration, and the National Institute for Occupational Safety and Health and shall include, but not be limited to, measures for identifying and assessing hazards, to which persons engaged in removal, remedy, or other response to hazardous substances may be exposed, methods to protect workers from such hazards, and necessary regulatory and enforcement measures to assure adequate protection of such employees[.] *and*

(7) the costs of grants, to each of five States selected by the Administrator, not to exceed a total of $30,000,000 per year, to establish and operate a program of assistance to individuals suffering injury resulting from exposure to the release of hazardous substances, as authorized under subsection (m).

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(e)(1) * * *

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(3) No money in the Fund shall be available for remedial action, other than actions specified in subsection (c) of this section, with respect to federally owned facilities: *Provided, That money in the Fund shall be available for the provision of alternative water supplies (including the reimbursement of costs incurred by a municipality) in any case involving groundwater contamination outside the boundaries of a federally owned facility in which the federally owned facility is not the only potentially responsible party.*

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(f) The President is authorized to promulgate regulations designating one or more Federal officials who may obligate money in the Fund in accordance with this section or portions thereof. The President is also authorized to delegate authority to obligate money in the Fund or to settle claims to officials of a State *or Indian tribe* operating under a contract or cooperative agreement with the Federal Government pursuant to section 104(d) of this title.

* * * * * * *

(i) Except in a situation requiring action to avoid an irreversible loss of natural resources or to prevent or reduce any continuing danger to natural resources or similar need for emergency action, funds may not be used under this Act for the restoration, rehabilitation, or replacement or acquisition of the equivalent of any natural resources until a plan for the use of such funds for such purposes has been developed and adopted by affected Federal agencies and the Governor or Governors of any State *and by the governing body of any Indian tribe having sustained damage to natural resources belonging to, managed by, controlled by, or appertaining to such tribe, or held in trust for the benefit of such tribe, or belonging to a member of such tribe if such resources are subject to a trust restriction on alienation,* having sustained damage to natural resources within its borders, belonging to, managed by or appertaining to such State, after adequate public notice and opportunity for hearing and consideration of all public comment.

* * * * * * *

(m)(1) The Administrator shall, upon application pursuant to procedures established by the Administrator, select by no later than July 1, 1985, five States to each establish and operate for not less than a five-year period a program of assistance to individuals suffering injury resulting from exposure to hazardous substances. Each grant shall be in an amount of not less than $3,000,000 and not more than $18,000,000 for each of the fiscal years of 1986, 1987, 1988, 1989, and 1990. States shall be selected in the sole discretion of the Administrator on the basis of the following criteria:

(A) The experience of State and local governments in administering programs which deal with the regulation of toxic chemicals;

(B) the existence of and experience with a statutory scheme of response and liability of breadth similar to that of this Act; and

(C) the representative nature of the hazardous substance releases and exposures in terms of the identities and toxic characteristics of the substances found, the manner and degree of exposures, and the seriousness and duration of the diseases or illnesses caused.

(2) Programs funded pursuant to this subsection shall, at a minimum, provide the following:

(A) In the case of the population of any area or class of individuals in which no solvent responsible party who may be liable under section 107 is paying compensation for claims or providing assistance, comparable to assistance under this subsection, nor has accepted liability for such claims or assistance, and where the State determines, based on available information (including that submitted by members of such population or class or developed under section 104(i)), that—

(i) exposure to a hazardous substance in a release has caused injury, illness, or disease;

(ii) the population or class has been exposed to a hazardous substance in a release and a peer-reviewed epidemiological or other health study demonstrates a positive correlation between such exposure and an adverse health effect in such population or class;

(iii) the population or class has been exposed to a hazardous substance in a release and there is evidence that members of the population or class have adverse health effects that enter remission when exposure is temporarily eliminated;

(iv) members of the population or class have an injury, illness, or disease which is only associated with exposure to a particular hazardous substance (where such injury, illness, or disease cannot be attributed to exposure in the workplace),

such population, or class shall be eligible for the assistance provided in subparagraph (B).

(B) Subject to subparagraph (C), the State shall provide each member of an eligible population or class under paragraph (1) with the following assistance:

(i) a group insurance policy providing burial benefits, where death is reasonably related to injury, illness, or disease associated with exposure to a hazardous substance in a release;

(ii) a group medical benefits insurance policy providing the reasonable costs of all medical and surgical treatment and hospitalization, excluding treatment or hospitalization solely arising from accidental injury, routine pregnancy, and well baby care, and subject to an annual deductible of $500, with no copayment requirement or annual or lifetime limitation on expenditures; and

(iii) a group disability insurance policy, for those members of the population or class currently employed or with a history of employment.

(C) Such policies provided under subparagraph (B) shall be secondary to, and provide for nonduplication of benefits with, any other policy in favor of such individual. The benefits of such other policy shall be those determined to be in force as of the date the State initiates proceedings toward a determination under subparagraph (A).

(D) Assistance under this subsection shall be provided on the condition that the costs thereof in connection with any individual pursuing a claim against a potentially responsible party shall be repaid to the Fund out of the proceeds of any award or settlement of such claim.

(n) For fiscal year 1985, not less than $18,000,000 and, for each fiscal year thereafter, not less than five per centum of all sums appropriated from the Trust Fund or $50,000,000, whichever is less, shall be directly available to the Agency for Toxic Substances and Disease Registry and used for the purpose of carrying out activities described in subsection (c)(4) and section 104(i), including any such activities related to hazardous waste stored, treated, or disposed of at a facility having a permit under section 3005 of the Solid Waste Disposal Act. Any funds so made available which are not obligated by the beginning of the fourth quarter of the fiscal year in which made available shall be made available in the Trust Fund for other purposes.

CLAIMS PROCEDURE

SEC. 112. (a) * * *

* * * * * * *

[(d) No claim may be presented, nor may an action be commenced for damages under this title, unless that claim is presented or action commenced within three years from the date of the discovery of the loss or the date of enactment of this Act, whichever is later: *Provided, however,* That the time limitations contained herein shall not begin to run against a minor until be reaches eighteen years of age or a legal representative is duly appointed for him, nor against an incompetent person until his incompetency ends or a legal representative is duly appointed for him.]

(d) No claim may be presented, nor may any action be commenced, under this title—

(1) for the costs of response, unless that claim is presented or action commenced within three years after the date of completion of the response action;

(2) for damages under subparagraph (C) of section 107(a), unless that claim is presented or action commenced within three years after the date on which final regulations are promulgated under section 301(c) or within three years after the date of the discovery of the loss and its connection with the release in question or the date enactment of this Act, whichever is later; or

(3) for any other damages, unless that claim is presented or action commenced within three years after the date of the discovery of the loss and its connection with the release in question

or the date of enactment of this Act, whichever is later: Provided, however, That the time limitations contained in this paragraph shall not begin to run against a minor until he reaches eighteen years of age or legal representative is duly appointed for him, nor against an incompetent person until his incompetency ends or a legal representative is duly appointed for him, nor against an Indian tribe until the United States, in its capacity as trustee for the tribe, gives written notice to the governing body of the tribe that it will not present a claim or commence an action on behalf of the tribe or fails to present a claim or commence an action within the time limitations specified in this subsection. No claim may be presented or action be commenced under this paragraph for any damages if, prior to the date of enactment of the Superfund Amendments of 1984, the statute of limitations which would otherwise apply under this paragraph has expired.

LITIGATION, JURISDICTION AND VENUE

[SEC. 113. (a) Review of any regulation promulgated under this Act may be had upon application by any interested person only in the Circuit Court of Appeals of the United States for the District of Columbia. Any such application shall be made within ninety days from the date of promulgation of such regulations. Any matter with respect to which review could have been obtained under this subsection shall not be subject to judicial review in any civil or criminal proceeding for enforcement or to obtain damages or recovery of response costs.]

SEC. 113. (a)(1) Review of any regulation promulgated under this act may be had upon application by any interested person in the Circuit Court of Appeals of the United States for the District of Columbia or in any United States Court of Appeals for a circuit in which the applicant resides or transacts business which is directly affected by such regulation. Any such application shall be made within one hundred and twenty days from the date of promulgation of such regulation, or after such date only if such application is based solely on grounds which arose after such one hundred and twentieth day. Any matter with respect to which review could have been obtained under this subsection shall not be subject to judicial review in any civil or criminal proceeding for enforcement or to obtain damages or recovery of response costs.

(2)(A) If applications for review of the same agency action have been filed in two or more United States Courts of Appeals and the Administrator has received written notice of the filing of the first such application more than thirty days before receiving written notice of the filing of the second application, then the record shall be filed in that court in which the first application was filed. If applications for review of the same agency action have been filed in two or more United States Courts of Appeals and the Administrator has received written notice of the filing of one or more applications within thirty days or less after receiving written notice of the filing of the first application, then the Administrator shall promptly advise in writing the Administrative Office of the United States Courts that applications have been filed in two or more United

States Courts of Appeals, and shall identify each court for which he has written notice that such applications have been filed within thirty days or less of receiving written notice of the filing of the first such application. Pursuant to a system of random selection devised for this purpose, and within three business days after receiving such notice from the Administrator, the Administrative Office thereupon shall select the court in which the record shall be filed from among those identified by the Administrator. Upon notification of such selection, the Administrator shall promptly file the record in such court. For the purpose of review of agency action which has previously been remanded to the Administrator, the record shall be filed in the United States Court of Appeals which remanded such action.

(B) Where applications have been filed in two or more United States Courts of Appeals with respect to the same agency action and the record has been filed in one of such courts pursuant to subparagraph (A), the other courts in which such applications have been filed shall promptly transfer such applications to the United States Court of Appeals in which the record has been filed. Pending selection of a court pursuant to subparagraph (A), any court in which an application has been filed may postpone the effective date of the agency action until fifteen days after the Administrative Office has selected the court in which the record shall be filed.

(C) Any court in which an application with respect to any agency action has been filed, including any court selected pursuant to subparagraph (A), may transfer such application to any other United States Court of Appeals for the convenience of the parties or otherwise in the interest of justice.

RELATIONSHIP TO OTHER LAW

SEC. 114. (a) * * *

* * * * * * *

(c) Except as provided in this Act, no person may be required to contribute to any fund, the purpose of which is to pay compensation for claims for any costs of response or damages or claims which may be compensated under this title. *Nothing in this section shall preclude any State from requiring any person to contribute to a fund to pay (1) the costs of the non-Federal share or other State responsibilities under section 104(c)(3), or (2) the direct and indirect costs of response actions at facilities or locations where the President has not responded under this Act or in addition to response actions taken under this Act, or, (3) any other management, enforcement, or administration activities related to response actions or other cleanup of hazardous substances or hazardous wastes.* Nothing in this section shall preclude any State from using general revenues for such a fund, or from imposing a tax or fee upon any person or upon any substance in order to finance the purchase or prepositioning of hazardous substance response equipment or other preparations for the response to a release of hazardous substances which affects such State.

* * * * * * *

AUTHORITY TO DELEGATE, ISSUE REGULATIONS

SEC. 115. The President is authorized to delegate and assign any duties or powers imposed upon or assigned to him and to promulgate any regulations necessary to carry out the provisions of this title: *Provided, That with respect to a Federal facility or activity for which such duties or powers are delegated to an officer, employee or representative of the department, agency or instrumentality which owns or operates such facility or conducts such activity, the concurrence of the Administrator (and the responsible State official where a cooperative agreement has been entered into) shall be required for the selection of appropriate remedial action and the administrative order authorities of section 106(a) are hereby delegated to the Administrator.*

INDIAN TRIBES

SEC. 116. The governing body of an Indian tribe shall be afforded substantially the same treatment as a State with respect to the provisions of section 103(a) (regarding notification of releases), section 104(c)(2) (regarding consultation on remedial actions), section 104(e) (regarding access to information), section 104(i) (regarding cooperation in establishing and maintaining national registries), and section 105 (regarding roles and responsibilities under the national contingency plan and submittal of priorities for remedial action, but not including the provision regarding the inclusion of at least one facility per State on the national priority list).

TITLE II—HAZARDOUS SUBSTANCE RESPONSE REVENUE ACT OF 1980

Subtitle A—Imposition of Taxes on Petroleum and Certain Chemicals

SEC. 211. IMPOSITION OF TAXES.

(a) GENERAL RULE.—Subtitle D (relating to miscellaneous excise taxes) is amended by inserting after chapter 37 the following new chapter:

"CHAPTER 38—ENVIRONMENTAL TAXES

"Subchapter A. Tax on petroleum.
"Subchapter B. Tax on certain chemicals.

"Subchapter A—Tax on Petroleum

"Sec. 4611. Imposition of tax.
"Sec. 4612. Definitions and special rules.

"SEC. 4611. IMPOSITION OF TAX.

"(a) GENERAL RULE.—There is hereby imposed a tax of [0.79 cent] *cents* a barrel on—

"(1) crude oil received at a United States refinery, and

"(2) petroleum products entered into the United States for consumption, use, or warehousing.

"(b) TAX ON CERTAIN USES AND EXPORTATION.—

"(1) IN GENERAL.—If—

"(A) any domestic crude oil is used in or exported from the United States, and

"(B) before such use or exportation, no tax was imposed on such crude oil under subsection (a),

then a tax of [0.79 cent] *cents* a barrel is hereby imposed on such crude oil.

* * * * * * *

["(d) TERMINATION.—The taxes imposed by this section shall not apply after September 30, 1985, except that if on September 30, 1983, or September 30, 1984—

["(1) the unobligated balance in the Hazardous Substance Response Trust Fund as of such date exceeds $900,000,000, and

["(2) the Secretary, after consultation with the Administrator of the Environmental Protection Agency, determines that such unobligated balance will exceed $500,000,000 on September 30 of the following year if no tax is imposed under section 4611 or 4661 during the calendar year following the date referred to above, then no tax shall be imposed by this section during the first calendar year beginning after the date referred to in paragraph (1).]

"(d) TERMINATION.—The tax imposed by this section shall not apply after September 30, 1990."

"Subchapter B—Tax on Certain Chemicals

"Sec. 4661. Imposition of tax.
"Sec. 4662. Definitions and special rules.

"SEC. 4661. IMPOSITION OF TAX.

"(a) GENERAL RULE.—There is hereby imposed a tax on any taxable chemical sold by the manufacturer, producer, or importer thereof.

"(b) AMOUNT OF TAX.—The amount of the tax imposed by subsection (a) shall be determined in accordance with the following table:

["In the case of:	The tax is the following amount per ton
Acetylene	$4.87
Benzene	4.87
Butane	4.87
Butylene	4.87
Butadiene	4.87
Ethylene	4.87
Methane	3.44
Naphthalene	4.87
Propylene	4.87
Toluene	4.87
Xylene	4.87
Ammonia	2.64
Antimony	4.45
Antimony trioxide	3.75
Arsenic	4.45
Arsenic trioxide	3.41

[“In the case of:	The tax is the following amount per ton
Barium sulfide	2.30
Bromine	4.45
Cadmium	4.45
Chlorine	2.70
Chromium	4.45
Chromite	1.52
Potassium dichromate	1.69
Sodium dichromate	1.87
Cobalt	4.45
Cupric sulfate	1.87
Cupric oxide	3.59
Cuprous oxide	3.97
Hydrochloric acid	0.29
Hydrogen fluoride	4.23
Lead oxide	4.14
Mercury	4.45
Nickel	4.45
Phosphorus	4.45
Stannous chloride	2.85
Stannic chloride	2.12
Zinc chloride	2.22
Zinc sulfate	1.90
Potassium hydroxide	0.22
Sodium hydroxide	0.28
Sulfuric acid	0.26
Nitric acid	0.24]

“In the case of:	
Organic Substances:	
Acetylene	
Benzene	
Butadiene	
Butane	
Butylene	
Ethylene	
Methane	
Naphthalene	
Propylen	
Toluene	
Xylene	
Inorganic Substances:	
Ammonia	
Antimony	
Antimony trioxide	
Arsenic	
Arsenic trioxide	
Barium sulfide	
Bromine	
Cadmium	
Chlorine	
Chromite	
Chromium	
Cobalt	
Cupric oxide	
Cupric sulfate	
Cuprous oxide	
Hydrochloric acid	
Hydrogen fluoride	
Lead oxide	
Mercury	
Nickel	
Nitric acid	
Phosphorus	
Potassium dichromate	
Potassium hydroxide	

"In the case of:

Sodium dichrimate.....
Sodium hydroxide.....
Stannic chloride.....
Stannous chloride.....
Sulfuric acid.....
Zinc chloride.....
Zinc sufate .....

* * * * * * *

"SEC. 4662. DEFINITIONS AND SPECIAL RULES.

* * * * * * *

"(b) EXCEPTIONS; OTHER SPECIAL RULES.—For purposes of this subchapter—

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"(5) SUBSTANCES USED IN THE PRODUCTION OF ANIMAL FEED.—

"(A) IN GENERAL.—In the case of nitric acid, sulfuric acid, phosphoric acid, ammonia, or methane used to produce ammonia, which is a qualified animal feed substance, no tax shall be imposed under section 4661(a).

"(B) QUALIFIED ANIMAL FEED SUBSTANCE.—For purposes of this section, the term 'qualified animal feed substance' means any substance—

"(i) used in a qualified animal feed use by the manufacturer, producer or importer,

"(ii) sold for use by any purchaser in a qualified animal feed use, or

"(iii) sold for resale by any purchaser for use, or resale for ultimate use, in a qualified animal feed use.

"(C) QUALIFIED ANIMAL FEED USE.—The term 'qualified animal feed use' means any use in the manufacture or production of animal feed or animal feed supplements, or of ingredients used in animal feed or animal feed supplements.

"(D) TAXATION OF NONQUALIFIED SALE OR USE.—For purposes of section 4661(a), if no tax was imposed by such section on the sale or use of any chemical by reason of subparagraph (A), the first person who sells or uses such chemical other than in a sale or use described in subparagraph (A) shall be treated as the manufacturer of such chemical."

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"(d) REFUND OR CREDIT FOR CERTAIN USES.—

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"(3) USE IN THE PRODUCTION OF ANIMAL FEED.—Under regulations prescribed by the Secretary, if—

"(A) a tax under section 4661 was paid with respect to nitric acid, sulfuric acid, phosphoric acid, ammonia, or methane used to produce ammonia, without regard to subsection (b)(7), and

"(B) any person uses such substance as a qualified animal feed substance,

then an amount equal to the excess of the tax so paid over the tax determined with regard to subsection (b)(7) shall be allowed as a credit or refund (without interest) to such person in the same

manner as if it were an overpayment of tax imposed by this section."

* * * * * * *

Subtitle B—Establishment of Hazardous Substance Response Trust Fund

SEC. 221. ESTABLISHMENT OF HAZARDOUS SUBSTANCE RESPONSE TRUST FUND.

(a) * * *

(b)(1) * * *

[(2) AUTHORIZATION FOR APPROPRIATIONS.—There is authorized to be appropriated to the Emergency Response Trust Fund for fiscal year—

[(A) 1981, $44,000,000,

[(B) 1982, $44,000,000,

[(C) 1983, $44,000,000,

[(D) 1984, $44,000,000, and

[(E) 1985, $44,000,000, plus an amount equal to so much of the aggregate amount authorized to be appropriated under subparagraphs (A), (B), (C), and (D) as has not been appropriated before October 1, 1984.]

(2) AUTHORIZATION FOR APPROPRIATIONS.—There is authorized to be appropriated to the Emergency Response Trust Fund for fiscal year—

(A) 1981, $44,000,000,

(B) 1982, $44,000,000,

(C) 1983, $44,000,000,

(D) 1984, $44,000,000,

(E) 1985, $44,000,000,

(F) 1986, $206,000,000,

(G) 1987, $206,000,000,

(H) 1988, $206,000,000,

(I) 1989, $206,000,000, and

(J) 1990, $206,000,000, plus an amount equal to so much of the aggregate amount authorized to be appropriated under subparagraphs (A) through (I) as has not been appropriated before October 1, 1989.

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TITLE III—MISCELLANEOUS PROVISIONS

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EXPIRATION, SUNSET PROVISION

[SEC. 303. Unless reauthorized by the Congress, the authority to collect taxes conferred by this Act shall terminate on September 30, 1985, or when the sum of the amounts received in the Treasury under section 4611 and under 4661 of the Internal Revenue Code of 1954 total $1,380,000,000, whichever occurs first. The Secretary of the Treasury shall estimate when this level of $1,380,000,000 will be reached and shall by regulation, provide procedures for the ter-

mination of the tax authorized by this Act and imposed under sections 4611 and 4661 of the Internal Revenue Code of 1954.]

SEC. 303. Unless reauthorized by the Congress, the authority to collect taxes conferred by this Act (other than under section 4681 of the Internal Revenue Code) shall terminate on September 30, 1990, or when the sum of the amounts received in the Treasury under sections 4611 and 4661 of the Internal Revenue Code of 1954 total $6,470,000,000, whichever occurs first. The Secretary of the Treasury shall estimate when this level of $6,470,000,000 will be reached and shall by regulation, provide procedures for the termination of the tax authorized by this Act and imposed under sections 4611 and 4661 of the Internal Revenue Code of 1954.

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THE SOLID WASTE DISPOSAL ACT (P.L. 94-580)

* * * * * * *

Subtitle C—Hazardous Waste Management

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PERMITS FOR TREATMENT, STORAGE, OR DISPOSAL OF HAZARDOUS WASTE

SEC. 3005. (a) * * *

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(j) EXPOSURE INFORMATION AND HEALTH ASSESSMENTS.—(1) Beginning on the date nine months after the enactment of the Solid Waste Disposal Act Amendments of 1984, each completed application for a permit under subsection (c) for a landfill or surface impoundment shall be accompanied by information reasonably ascertainable by the owner or operator on the potential for the public to be exposed to hazardous wastes or hazardous constituents through releases related to the unit. At a minimum, such information must address—

(A) reasonably foreseeable potential releases from both normal operations and accidents at the unit, including releases associated with transportation to or from the unit;

(B) the potential pathways of human exposure to hazardous wastes or constituents resulting from the releases described under subparagraph (A); and

(C) the potential magnitude and nature of the human exposure resulting from such releases.

The owner or operator of a landfill or surface impoundment for which a completed application for a permit under subsection (c) has been submitted prior to such date shall submit the information required by this paragraph to the Administrator (or the State, in the case of a State with an authorized program) no later than the date nine months after such date of enactment.

(2) The Administrator (or the State, in the case of a State with an authorized program) shall make the information required by paragraph (1), together with other relevant information, available to the Agency for Toxic Substances and Disease Registry established by section 104(i) of the Comprehensive Environmental Response, Com-

pensation, and Liability Act of 1980. Whenever in the judgment of the Administrator of such Agency, the Administrator, or the State (in the case of a State with an authorized program), a landfill or a surface impoundment poses a substantial potential risk to human health, due to the existence of releases of hazardous consitutents, the magnitude of contamination with hazardous consitutents which may be the result of a release, or the magnitude of the population exposed to such release or contamination, the Administrator of the Agency for Toxic Substances and Disease Registry shall conduct a health assessment in connection with such facility in accordance with section 104(i)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and take other appropriate action with respect to such risks as authorized by section 104 (b) and (i) of such Act.

(3) Any member of the public may submit evidence of releases of or exposure to hazardous constituents from such a facility, or as to the risks or health effects associated with such releases or exposure, to the Administrator of the Agency for Toxic Substances and Diseases Registry, the Administrator, or the State (in the case of a State with an authorized program).

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